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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 91, No. 18 | 535 North Dearborn Street, CHICAGO, ILL. | NOVEMBER 3, 1928

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 91, No. 18 CHICAGO, ILLINOIS NOVEMBER 3, 1928

CROUPOUS PNEUMONIA AND BRONCHOPNEUMONIA

COMPARISON OF THE CLINICAL, RADIOLOGIC AND POSTMORTEM DIAGNOSES *

J. P. CROZER GRIFFITH, M.D.
PHILADELPHIA

Contributions which are constructive are rather more interesting than those which are destructive. I am sorry that my paper is rather of the latter nature. But after all it is better to know that we don't know than it is not really to know what we think we know.

My studies refer to two problems: first, the relative incidence of croupous pneumonia and bronchopneumonia, respectively, and, second, the differential diagnosis of the two forms.

In considering the discussions that have taken place from time to time regarding the relative incidence of croupous pneumonia and of bronchopneumonia, and especially as to the dependence to be placed respectively on clinical and on x-ray study, it would appear to me that the only method of determining the actual condition with any approximation of accuracy is to compare the observations during life with the lesions discovered post mortem. With this in view I have made a study of twenty-six cases occurring in the wards of the Children's Hospital of Philadelphia, in which a diagnosis of pneumonia had been made during life either by clinical or by x-ray examination or by both, all the cases having come later to autopsy. I want to express my sincere thanks for the cooperation of Dr. Ralph Bromer, the roentgenologist, and Dr. Arthur Waltz, the pathologist, to the hospital, without whose aid the investigation would have been impossible. It should be said at once that no effort is being made here to prove the superiority of clinical over radiologic diagnosis or the reverse. Every physician realizes that the two must be used in conjunction and as a mutual check. It is true also that nothing can be learned here as to the relative frequency of occurrence of the two forms of pneumonia, since, as is to be expected, the very large majority of fatal cases in early life will be found at autopsy to have been of the bronchopneumonic type.

It has long been borne in on me that the clinical diagnosis between croupous pneumonia and bronchopneumonia was too often dependent on the views of the individual examiner. By this is not meant that in typical cases there should be any difficulty; but so many instances are not typical that, including these numerous doubtful ones, the value of statistical figures is largely vitiated. In table 1, by way of proof of this, there are a few comparative statistics as given by different writers.

TABLE 1.—*Relative Frequency of Croupous Pneumonia and Bronchopneumonia*

Observer	City	First Two Years Only: Cases	Croupous	Bronchopneumonia	Ratio
Heiman: Am. J. Dis. Child. **20**: 119 (Aug.) 1920	New York	215	12	203	1 to 16.9
Dunlop: Brit. M. J. **2**: 367, 1908	Edinburgh	278	45	233	1 to 5.21
Lyon: Boston M. & S. J. **185**: 189 (Aug. 18) 1921	Boston	64	12	52	1 to 4.33
Holt: Diseases of Infancy and Childhood, p. 495	New York	322	80	242	1 to 3.02
Pisek and Pease: Am. J. M. Sc. **151**: 14 (Jan. 16) 1916	New York	553	172	381	1 to 2.22
Smith: Personal communication to the author	New York	97	59	38	1 to 0.64
Morse: Arch. Pediat. **21**: 641, 1904	Boston	178	118	60	1 to 0.51

	City	Infants and Children in General: Cases	Age	Croupous	Bronchopneumonia	Ratio
Heiman: Am. J. Dis. Child. **20**: 119 (Aug.) 1920	New York	336	Under 6 years	48	288	1 to 6.00
Dunlop: Brit. M. J. **2**: 367, 1908	Edinburgh	500	All periods childhood	147	353	1 to 2.41
Pisek and Pease: Am. J. M. Sc. **151**: 14 (Jan. 16) 1916	New York	672	Under 6 years	227	445	1 to 1.96
Moffett: Arch. Pediat. **41**: 743 (Nov.) 1924	Boston	417	Up to 14 years	218	199	1 to 0.91
Lyon: Boston M. & S. J. **185**: 189 (Aug. 18) 1921	Boston	208	Up to 12 years	109	99	1 to 0.91
Holt: Diseases of Infancy and Childhood, p. 495	New York	370	Up to 4 years	261	109	1 to 0.42
Smith: Personal communication to the author	New York	176	Up to 12 years	134	42	1 to 0.31

It should be said here that Heiman's [1] cases occurred during the severe epidemic of influenza, in which bronchopneumonia was so frequent; and Morse [2] states that his figures, he thinks, do not represent the actual relative incidence of the two forms. Both represent, however, the statistics on which relative incidence must be based.

It is manifest that this wide variation in the ratio of the two forms of pneumonia cannot be accounted for by locality, season, social conditions or, in fact, any other factors than the personal equation of the investigator, with the exception of Heiman's cases; and a little reading of the opinions of writers who have not published statistics confirms the fact of the wide

* Read before the Section on Diseases of Children at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Heiman, Henry: A Study of Pneumonia in Infancy and Childhood During Recent Epidemics, Am. J. Dis. Child. **20**: 119 (Aug.) 1920.
2. Morse: Arch. Pediat. **21**: 641, 1904.

difference of view among them regarding the relative frequency of the two forms.

The diagnosis is of great importance when it can be made, from the point of view of prognosis, and in many cases it can be made with reasonable certainty, but in many others it cannot. It is, I think, the general opinion that croupous pneumonia runs, as a rule, a very favorable course in childhood; but even this is disputed. Moffett,[3] for instance, found the mortality 12.9 per cent in his cases believed to be croupous pneumonia, and only 7.1 per cent in those assigned to the class of bronchopneumonia. So, too, it is the usual belief that

TABLE 2.—*Comparison of Clinical, Radiologic and Postmortem Diagnoses*

Patient	Sex*	Age	Clinical	X-Ray	Autopsy
E. W.	♀	11 mos.	Croupous pneumonia	Broncho-pneumonia	Broncho-pneumonia
J. C.	♂	9 mos.	Croupous pneumonia	Croupous pneumonia	Croupous pneumonia
W. H.	♂	13 mos.	Broncho-pneumonia	Croupous pneumonia	Broncho-pneumonia
F. N.	♂	2 yrs.	Broncho-pneumonia	Broncho-pneumonia	Broncho-pneumonia
C. L.	♀	10 mos.	Broncho-pneumonia	Broncho-pneumonia	Broncho-pneumonia
R. P.	♂	1 yr.	Croupous pneumonia	Croupous pneumonia	Croupous pneumonia
G. S.	♀	1½ mos.	Broncho-pneumonia	Croupous pneumonia	Broncho-pneumonia
S. T.	♂	10 mos.	Croupous pneumonia	Croupous pneumonia	Broncho-pneumonia
E. S.	♀	15 mos.	Broncho-pneumonia	Broncho-pneumonia	Atelectasis and passive congestion
A. S.	♀	16 mos.	Tuberculosis	Broncho-pneumonia	Broncho-pneumonia
P. D.	♂	10 mos.	Broncho-pneumonia	Tuberculosis	Broncho-pneumonia
J. T.	♀	22 mos.	Croupous pneumonia	Broncho-pneumonia	Broncho-pneumonia
C. B.	♀	19 mos.	Broncho-pneumonia	Tuberculosis	Broncho-pneumonia
R. O'H.	♀	3½ mos.	Broncho-pneumonia	Broncho-pneumonia	Atelectasis and infarct
A. A.	♂	9 mos.	Croupous pneumonia	Broncho-pneumonia	Croupous pneumonia
A. W.	♂	2 mos.	Broncho-pneumonia	Lungs clear	Broncho-pneumonia
P. C.	♀	2½ yrs.	Broncho-pneumonia	Broncho-pneumonia	Broncho-pneumonia
C. B.	♂	8 mos.	Broncho-pneumonia	Tuberculosis	Broncho-pneumonia
J. R.	♂	2 yrs.	Croupous pneumonia	Pleural effusion	Empyema
S. S.	♀	3 mos.	Lungs clear	Broncho-pneumonia	Lungs clear
L. W.	♀	13 mos.	Croupous pneumonia	Croupous pneumonia	Croupous pneumonia
W. J.	♀	14 mos.	Bronchitis	Broncho-pneumonia	Broncho-pneumonia
M. H.	♀	5 mos.	Broncho-pneumonia	Croupous pneumonia	Tuberculosis
J. D.	♂	8½ mos.	Lungs clear	Broncho-pneumonia	Meningitis
P. S.	♀	16 mos.	Croupous pneumonia	Broncho-pneumonia	Broncho-pneumonia
W. N.	♂	7 mos.	Croupous pneumonia	Croupous pneumonia	Broncho-pneumonia

* In this column ♂ indicates male; ♀, female.

bronchopneumonia is much more common in the first two years than it is later; but that croupous pneumonia is relatively more frequent after two years than before this period is a matter still of dispute.

In table 2 a series of cases is exhibited, not selected in any way except that pneumonia was diagnosed either clinically or radiologically. It will be noticed that very few of these patients were found post mortem to have had croupous pneumonia, and this, I believe, supports the view that this form of the disease is seldom fatal at this time of life, if without complications. This does not have, of course, a bearing on the incidence of the disease. Cases are not included in the table in which an autopsy was not made. Consequently, it is impossible to determine how often the clinical diagnosis or the x-ray diagnosis was correct when a difference existed in those patients who recovered.

Analyzing the cases as shown in table 3, we find that of the twenty-six cases the three diagnoses agreed in only six instances. In ten cases the clinical and x-ray diagnosis agreed, but in four of these neither diagnosis was correct. In sixteen cases the clinical and x-ray diagnoses disagreed, and of these the clinical diagnosis was correct in nine instances and the x-ray diagnosis in six, and neither of them in one case. Leaving out the six cases in which all three diagnoses were the same, it is noted that of the remaining twenty cases the clinical diagnosis was confirmed in nine instances and the x-ray diagnosis in six, while in five neither was correct.

The conclusions to be drawn from this analysis are that both physical examination and x-ray examination are of value, as we all admit, but that neither can be accepted as beyond doubt in very many instances. When the two agree, the probability of correctness of diagnosis should be greatly increased; but the figures I have given do not make this appear to be a necessary result, four of the ten cases of this category showing that both diagnoses were incorrect.

TABLE 3.—*Analyses of Cases*

Diagnosis of pneumonia: clinical, roentgenologic or post mortem	26
Diagnosis agreed by all three methods	6
Clinical and x-ray diagnoses agreed	10
Of these both diagnoses incorrect	4
Clinical and x-ray diagnoses disagreed	16
Of these clinical diagnosis correct	9
X-ray diagnosis correct	6
Both incorrect	1
Of the 20 cases in which differences in the three methods existed:	
Clinical diagnosis correct	9
X-ray diagnosis correct	6
Neither correct	5

It should be said in this connection that the intensity of the x-ray shadow cannot be accepted as proof positive of the existence of a croupous inflammation. The existence of an intense limited shadow makes the existence of croupous pneumonia probable, but such a shadow can equally well be produced by a bronchopneumonia of the pseudolobar type, while, on the other hand, an indistinct smaller shadow points to the existence of bronchopneumonia but may be produced by a small area of croupous pneumonia. More, I think, is to be learned from observation of the clinical course of the disease, although even this may be deceptive, for in the cases studied this has been taken into full account.

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ABSTRACT OF DISCUSSION

DR. FRANKLIN P. GENGENBACH, Denver: All of the children in Dr. Griffith's series were in the first two years of life, and all came to autopsy. As this is the age when bronchopneumonia is most frequently found clinically, as checked by the roentgen ray, and is more apt to prove fatal than lobar pneumonia, one would naturally expect to find a majority of the cases to be bronchopneumonia, as shown by Dr. Griffith. During the past winter a large percentage of the cases of pneumonia coming to autopsy at the Children's Hospital in Denver were of the type of laryngotracheobronchopneumonitis. They were characterized by a rather abrupt onset, intense congestion and marked swelling of the mucous membranes, starting in the throat and larynx, and rapidly extending downward into

3. Moffett, R. D.: Arch. Pediat. 41:743 (Nov.) 1924.

the lungs. Clinically, we found that dyspnea and cyanosis were so marked that intubation or tracheotomy were usually necessary for immediate relief, with often bronchoscopic suction aspiration of the very tenacious plugs of mucus which tended to plug the bronchi. In some of these cases the progress of the infection, which bacteriologically was apparently always influenzal in type, was so rapid that the roentgenograms were practically negative, but autopsy always showed a beginning bronchopneumonia.

DR. L. R. DEBUYS, New Orleans: The best way for a clinician to better himself is to commit himself as to his diagnosis. Particularly is this so in the diagnosis of pneumonia. After having once committed himself, he should make his various laboratory investigations, and see how correct he is. Every time he is wrong he learns more; he becomes a better physician. After committing himself as to the pneumonia, its type and so on, he can make blood examinations for confirmation. He can have sputum examined for the determination of the organism and the type of the pneumococcus. I want to emphasize the value of the roentgen ray. With this information he should know pretty well what he is dealing with. In my service it has been a routine for several years, as soon as the patient with respiratory disease has been admitted and examined, to make a roentgenogram of the chest or the lungs. In the event that any pathologic condition is shown by the roentgen ray, daily or every two days subsequently pictures are made so that the progress of the condition may be ascertained. In this way a great deal of value can be obtained in the differentiation of the various pneumonias.

DR. H. J. GERSTENBERGER, Cleveland: I should like to ask Dr. Griffith whether he has noticed that the condition of the child, the type of the child, plays a rôle in determining the type of pneumonia that develops. I have the impression that lobar pneumonia is much more frequent in individuals or infants under 2 years who are well built, with excellent chest formation, than in those who have a chest that is inclined to be narrowed in different places, typically in an infant with a rachitic chest. Further, croupous pneumonia appears in children whose nasopharynx is not infected. Rickets and scurvy are two diseases that change the form of the chest, and in these diseases I think we nearly always find bronchopneumonia present. Rickets is a very common disease. It does not have to be present in its most marked form in order to play a rôle in determining the type of pneumonia that is produced.

DR. ISAAC A. ABT, Chicago: I am in full agreement with Dr. Griffith as to the frequency of the occurrence of bronchopneumonia in young childhood. Indeed, I believe that bronchopneumonia is by far the most frequent form of pneumonia that attacks the young child. It seems to me that two essential points are to be considered. The first is that bronchopneumonia does not present a simple or a single type of symptom. Bronchopneumonia, in my judgment, is a clinical term which is meant to cover a variety of conditions because the nature of the infection varies. There is every kind of bronchopneumonia, from a pneumococcus pneumonia to a tubercle bacillus infection causing bronchopneumonia. Then there are various clinical types of bronchopneumonia which we recognize in infants and in very young children. First of all there is the respiratory type which resembles the lobar pneumonia of older children and adults, and which is largely a pulmonary affair. We also recognize another larger group of bronchopneumonias which may be termed the cardiovascular type, in which the child suffers not only from a pulmonary infection but also from a general constitutional reaction. The child is ill not only from the symptoms produced in the lung but also from symptoms produced in the circulatory system. There may also be alimentary or central nervous system involvements. The point I wish to make in considering the pneumonias of infancy and childhood are, first, bronchopneumonia is the most frequent because of the anatomic nature of the lungs; second, bronchopneumonia is not a unit so far as symptomatology is concerned but occurs in many forms, and, third, bronchopneumonia frequently is a constitutional disorder. We should never fail, in these serious illnesses that are characterized by cyanosis and dyspnea, to note the blood pressure daily in order that we may have an insight into the functioning of the cardiovascular system, and in order that we may prognosticate as to the outcome of the disease. I fully agree with Dr. Griffith that it is difficult to establish a clinical diagnosis or a differential diagnosis, but, on the other hand, it is equally difficult to be sure of the roentgen-ray examination. There are just as many fallacies in roentgen-ray examination of the lung as there are in the physical examination of the chest, because, after all, the roentgen-ray examination only represents the flat plate or the flat surface, and frequently we do not get the dimension of depth or thickness. Many an infiltrating condition of the lung has been, and will be, overlooked because of the fallacy due to the roentgen-ray plate or its interpretation.

DR. J. P. CROZER GRIFFITH, Philadelphia: As to the type of child affected by bronchopneumonia or croupous pneumonia to which Dr. Gerstenberger referred, I have often noticed, as doubtless we all have, the strong tendency which little rachitic children with contracted chests have to the development of bronchopneumonia, and the likelihood they show to die of the attack. Whether or not the healthy appearing, well developed children in the first two years contract croupous pneumonia or bronchopneumonia oftener I do not know. As I said, all that my tables could show was the relative frequency in the children who came to autopsy. I do not know what the relative incidence is in those who do not come to autopsy, and my first table indicated that apparently no one else does either. The very great difference in the ratios between the two forms, as shown in this table, seems explicable only on the basis of personal equation. In regard to the roentgen-ray examinations, I found a very great tendency on the part of the interns to delay the provisional diagnosis until they had the roentgen-ray report, and to make the diagnosis in accordance with this. Now as I wanted to get facts, I ignored these diagnoses very largely, and based my own on a study of the records of the physical signs, the temperature chart, the clinical history and the like. I think the results show that we cannot depend on the roentgen ray any more than we can on the clinical examination. In fact, as far as the figures go in the limited number of cases, the clinical examination made somewhat fewer mistakes than did the roentgen-ray examination, but neither of the two had anything to boast of. As to the variation in the subtypes of the pneumonias, that is something we all recognize. In the textbooks we find these variations, with different types of bronchopneumonia and of croupous pneumonia, described under different headings. In this contribution all were included under one or the other of the two major forms. I would emphasize again that, although the diagnosis of the variety is sometimes easy before the death of the patient, it is the pathologic examination which is the final criterion. Consequently, an accurate statistical study of the number of cases of the two varieties is not possible during life.

The Corpus Luysii.—The corpus Luysii, corpus subthalamicum or body of Luys, is an almond-shaped ganglion situated just below the optic thalamus; it lies immediately internal to the fibers of the pyramidal tract as they pass down from the internal capsule to the pes of the cerebral peduncle. Medial to it is the red nucleus and that complicated space known as Forel's field; below it is the substantia nigra. Its greatest length measures about 1.2 cm. The fibers which enter it come almost entirely from the lenticular nucleus, passing in considerable numbers across and around the internal capsule; of its efferent fibers some, as will be shown, descend into the midbrain behind the substantia nigra, and a few cross under the floor of the third ventricle to the corpus Luysii of the other side. The knowledge of its connections is still very incomplete. Of its functions I think it is fair to say that there has hitherto been no knowledge, although a few observers have drawn tentative conclusions from isolated cases. . . . Of the physiological action of the corpus Luysii little can yet be said, except that it exerts a control over impulses arising in certain lower structures which are probably situated in the midbrain. There is no unanimity as to the nature of the impulses which cause chorea, and until we know their nature we cannot deduce the normal function of the corpus Luysii from the symptoms liberated by its destruction.—Martin, J. P.: *Lancet*, Aug. 18, 1928.

MOTOR AND SECRETORY FUNCTIONS OF THE STOMACH

SIMPLE METHOD FOR SIMULTANEOUS DETERMINATION AND ANALYSIS OF RESULTS OBTAINED *

HARVEY G. BECK, M.D.
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During the centuries when medicine was practiced as an art, the knowledge of morbid anatomy and physiologic function was usually inadequate to make a correct diagnosis. As a result, treatment was chiefly symptomatic. Since medicine has become more of a science, diagnosis in a broad sense includes not only the pathologic phenomena which give rise to the symptoms but also a knowledge of the etiologic factors, the type and severity of the disease, and the disturbance of the functional activity of the organs involved. The latter is especially important from the standpoint of modern therapy. The patient's symptoms depend less on the character of the lesion causing the disease than on impairment of function. This is particularly true with respect to diseases of the heart, liver, kidneys and stomach. In all of these domains, investigators have spent much time in perfecting methods to determine their functional capacities with the result that many of these methods are now generally employed in making functional diagnoses.

The stomach possesses the three separate and distinct functions of secretion, motility and absorption. Of these the motor function is recognized as the most important, the secretory ranks second, while that of absorption is practically negligible from a clinical point of view. Prior to the discovery of the use of the stomach tube, our knowledge concerning the functions of the stomach was so meager that few disorders could be correctly interpreted in terms of diagnosis.

Just as the stethoscope made it possible to detect and interpret certain pathologic phenomena and differentiate various lesions of the heart and lungs, so the stomach tube has helped to solve many problems associated with diseases of the gastro-intestinal tract and has been of inestimable value in the development of this department of medicine. Although the method of extracting stomach contents by means of a tube was first resorted to by Philip S. Physick of Philadelphia in 1812, it was not employed generally until 1867, when Kussmaul used it as a therapeutic measure for washing out the stomach in a case of dilatation with pyloric obstruction due to ulcer. Several years later, Leube advocated it for diagnostic purposes. The interest from this time centered chiefly on the diagnostic study of the secretion, while relatively little attention was paid to the diagnosis of disturbances of motility. An evaluation of the comparative knowledge of these two functions may be obtained from the treatise on diseases of the stomach by Riegel, published in 1904. Despite the fact that clinically the motor function is of primary importance, eighty-four pages in this volume are devoted to a discussion of the method of extracting gastric secretions, the various test meals employed and the chemical analysis of the gastric contents: only eight pages are devoted to the diagnosis of the motor function and two pages to absorption.

The advent of roentgenologic methods of diagnosis in diseases of the gastro-intestinal tract and the admirable works of Cannon on the mechanical factors of digestion, published in 1911, and of Alvarez on the mechanics of the digestive tract, published in 1922, have awakened much interest in the subject.

For diagnostic purposes the various constituents of the gastric secretion are determined quantitatively. Prior to the introduction of the method to be described, practical methods were not available for determining the motor function quantitatively. Barium sulphate meal studies for retention by x-ray and Rehfuss' fractional method of gastric analysis furnish only an approximate estimation. The various methods that have been devised for the study of the motor function may be classified in three general groups:

1. Those which depend on the removal of a residue by means of the stomach tube after a test breakfast, dinner or supper (Leube, Riegel, Boas).
2. Indirect tests, which consist of introducing into the stomach substances insoluble in the acid gastric juice but soluble in the alkaline intestinal mediums, where they are split up into simpler substances which can be detected in the urine or saliva (Ewald and Sievers, phenyl salicylate; Fleisher, iodoform; Winckler and Stein, iodized oil).
3. Roentgenologic method (six hour barium retention).

The latter method, while possessing some admirable features, fails to determine the function quantitatively and is unpractical for routine work on account of the time it consumes and the expense to the patient. Among the numerous motor meals employed the oldest one is that of Leube, which consists of washing the stomach for residue six or seven hours after a test dinner consisting of a plate of soup, beefsteak, a roll and a glass of water. Riegel's test meal, which is employed in the same manner, is somewhat similar. This consists of 300 cc. of beef broth, 180 Gm. of beefsteak, 60 Gm. of mashed potatoes, and one roll. In the various test suppers, rice, currants, cranberries and raisins are included, as they can be easily recognized if any residue remains the next morning when gastric lavage is performed.

The Ewald test breakfast has been employed as a motor meal by washing the stomach in two hours, when it normally should be empty. The regular technic of an ordinary test meal has also been employed for the same purpose. In all of these methods the difficulty encountered in obtaining accurate results was the inability to empty the stomach completely. In an effort to overcome this objection and to obviate the necessity of repeated tests of a similar character, I devised a simple apparatus whereby the stomach can be completely emptied, thus combining a quantitative secretory determination with a quantitative motor determination.

A description of this appliance has already appeared.[1] All the methods previously employed, including Kussmaul's stomach pump, Ewald's and Boas' bulbs, Friedlieb's apparatus, Strauss' apparatus and aspirating bottles lacked two salient features:

1. The ability of applying continuous suction.
2. The means of maintaining the desired degree of suction necessary to withdraw the gastric contents without injury to the gastric mucosa.

Gross, in 1893, endeavored to meet these requirements by attaching an improvised U-shaped manometer to a small stomach tube and a modified Politzer bag. The method failed as he was unable to obtain a steady, continuous flow through the tube and to maintain an equable degree of suction.

* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

1. Beck, H. G.: An Apparatus Designed for the Use of Partial Vacuum in Diagnosis and Treatment, J. A. M. A. 67: 1658 (Dec. 2) 1916.

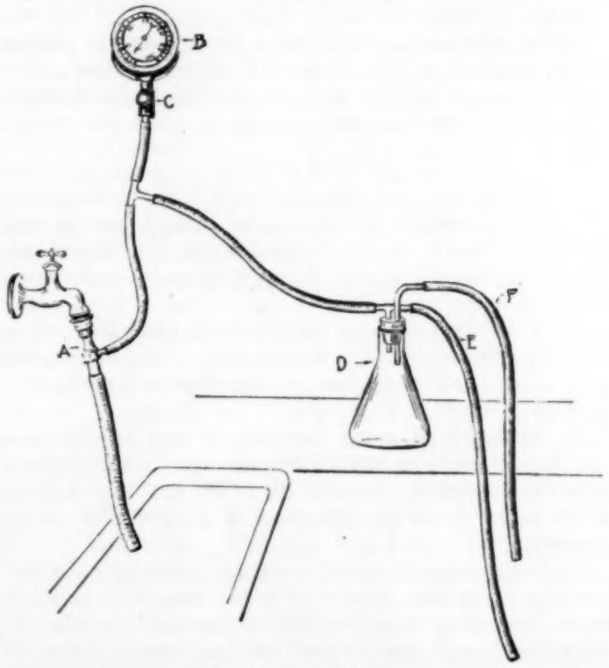
The apparatus which has been in use in our clinic for fourteen years has completely overcome these two objections. It consists of a filter pump connected by means of heavy rubber tubing with an ordinary vacuum gage, to which is attached a specially constructed valve for adjusting the degree of vacuum. Uniform and continuous suction to any degree desired, as expressed in inches of mercury, can thus be obtained. The water spigot serves for coarse adjustment, the valve designated as the vacuum regulator for fine adjustment as well as for a safety device, which makes it impossible to exceed the amount for which it is adjusted. For collecting stomach contents, an ordinary wash bottle (500 cc. Erlenmeyer flask) is attached with heavy rubber tubing to the apparatus, which is set for a vacuum of 5 inches of mercury. A large size stomach tube (38 French) is connected with the wash bottle and also rubber tubing of sufficient length for one end to rest on the floor. Suction is started after the stomach tube is introduced by compressing the tube on the floor with the foot; it is released by removing the foot. Thus both hands are free to manipulate the tube. Before the tube is removed, the stomach is washed out and the fluid collected in a suitable receptacle and examined for sediment. If by chance the contents were not completely removed, food particles can easily be recognized.

The test meal employed is one formerly used at the Mayo Clinic. It consists of six "Arrowroot Biscuits," a glass (200 cc.) of hot water and an equal amount of cold water. The "Arrowroot Biscuits" have the advantage of being palatable and uniform in weight, besides disintegrating readily in the stomach. More than 4,000 test meals have been removed by this method. The patients examined were not limited to a gastro-intestinal group but represent the general average patient visiting a medical clinic. For the purpose of study, 500 consecutive test meals removed were tabulated. Three hundred of these were aspirated at the end of sixty minutes and 200 at the end of fifty minutes. The average contents of the sixty minute group was 73 cc. and of the fifty minute group 94 cc. As an arbitrary standard it has been assumed that the maximum residue one hour after the ingestion of a test breakfast should be 100 cc. Any amount above this is indicative of hypomotility. It may also be assumed that any amount less than 20 cc. suggests hypermotility.

After the exclusion of all cases of a residue over 100 cc., which excluded practically all patients with obstructive lesions in the stomach, the sixty minute group averaged 49 cc. and the fifty minute group 58.3 cc. In the former group 26 per cent showed retention, the amount averaging 143.6 cc., and in the latter group 34 per cent showed retention with an average of 163.6 cc. In the combined groups there were 144 patients with a residue over 100 cc. Of these, gastric atony comprised 24.3 per cent; gallbladder disease with and without adhesions, 12.5 per cent; chronic spastic constipation with colonic stasis, 12.5 per cent; chronic appendicitis, 11 per cent; gastric ulcer, 5.5 per cent; duodenal ulcers, 4.8 per cent, and gastric carcinoma 3 per cent. Retention also occurred in a variety of other conditions. These included pelvic inflammations and uterine displacement, focal infection of tonsils, teeth and sinuses, tuberculosis, syphilis, toxic goiter and diabetes.

There were fifty-eight cases of chronic cholecystitis in the entire series. After the exclusion of those with a retention of more than 100 cc., most of which were associated with adhesions, there was a definite tendency to hypermotility. Thus, in the sixty minute group there was an average residue of 33.3 cc. as compared with 49 cc., the general average, and in the fifty minute group there was an average residue of 53.4 cc. as compared with the general average of 58 cc. The percentage of one hour retention cases was also less than the average. Comparing the effect of gallbladder lesions on gastric motility and secretions, the analysis showed that the latter does not deviate from the normal. Free hydrochloric acid ranging from 0 to 20 occurred in 25.4 per cent of the entire series, and it also occurred in exactly the same percentage in the gallbladder series. Free hydrochloric acid ranging from 20 to 40 occurred in 40 per cent in the general series, and in the gallbladder series it occurred in 40.2 per cent.

A comparative study of the results obtained by this method and six hour barium retention was made in collaboration with Dr. Evans.[2] On the whole, these results were disappointing. This series comprised 102



Suction Apparatus for aspirating stomach contents: *A*, filter pump; *B*, gage; C, air valve; *D*, collecting flask; *E*, tubing for starting suction by compression with foot; *F*, stomach tube.

cases. The most constant relation occurred in duodenal ulcer. Six hour barium retention occurred in a single case with less than 100 cc. hour retention, but six hour retention occurred in all cases except one with more than 100 cc. hour retention. In cases of pyloroduodenal adhesions, six hour retention occurred in 50 per cent of the cases with less than 100 cc. residue. The amounts varied from 40 to 70 cc. In ulcer of the stomach the results are also at variance. Some of these were due to hour-glass contraction.

Trauma rarely occurs in aspirating the stomach with the vacuum gage adjusted for 5 inches negative pressure. When it does occur it is usually associated with ulcers, achylia or interstitial gastritis. It also occurs relatively more frequently in cholecystitis and diabetes.

The method is of distinct value in studying the progress of disease, especially in those cases in which symptoms are largely due to impairment of motility. In atony of the stomach our records frequently show a

2. Beck, H. G., and Evans, J.: South. M. J. **13**: 559 (Aug.) 1920.

gradual decrease in the hour residue, from figures ranging from 200 to 250 cc. to as low as 60 or 70 cc., coincident with the general improvement of the patient. In these cases the decrease in the amount of the hour residue is far more significant than the slight variations of the acidity.

It is also interesting to note the improvement of motility in cases of chronic appendicitis after appendectomy. The delayed emptying of the stomach is usually associated with a hyperacidity syndrome. As this condition subsides, normal motility will become established.

States of hypermotility which are frequently encountered are also definitely determined by this method. In several of the series studied the stomach was completely emptied in sixty minutes, and in 12 per cent the amount recorded was 20 cc. or less; of these, 23 per cent occurred in achylia gastrica, 21 per cent in chronic cholecystitis and 10 per cent in conditions associated with chronic diarrhea. Hypermotility also occurred frequently in oral sepsis, spastic constipation and chronic gastritis.

In continuous hypersecretion the method is particularly adapted, as the degree of hypersecretion can be ascertained accurately only by the complete removal of the gastric secretions on a fasting stomach.

CONCLUSIONS

1. Experience has demonstrated that, by means of the suction method described, the stomach can be completely emptied of its contents and the motor and secretory functions can be quantitatively determined simultaneously.

2. With the exception of duodenal ulcer there is no definite relation between the amount of one hour retention after a test breakfast and six hour retention after a barium meal.

3. Retention of more than 100 cc. one hour after a test breakfast occurred in 26 per cent of the patients, whereas retention of more than 100 cc. fifty minutes after a test breakfast occurred in 34 per cent of the patients.

4. Impairment of motor function occurred most frequently in gastric atony: 24.3 per cent. It occurred more frequently in gallbladder disease and spastic constipation than in gastric and duodenal ulcers combined.

5. Chronic cholecystitis causes a disturbance of the motor function but does not affect the secretory function of the stomach.

6. In 12 per cent of the cases, hypermotility occurred with 20 cc. or less of gastric contents at the end of the test meal period; of these, 23 per cent were associated with achylia gastrica, 21 per cent with chronic cholecystitis and 10 per cent with chronic diarrhea.

7. The method may be advantageously employed in checking up the motor function during the course of treatment.

ABSTRACT OF DISCUSSION

DR. A. F. R. ANDRESEN, Brooklyn: Dr. Beck is to be complimented for having called attention to the importance of motility tests in diagnosis. I believe that there is a distinct field for testing motility by means of test meals, but the x-rays should always be used as a check. We note, at times, discrepancies between x-ray six hour and even twenty-four hour gastric retention and the observations in the laboratory by means of the passage of the stomach tube, but that makes it all the more necessary to check up by the two methods. Dr. Beck has discussed the previous methods, but neglected to mention that there have been tests of motility based on the use of some substance in the test meal which could be recognized quantitatively at the end of a certain period. Dudley Roberts used lactose, and others have used fats and various dyes, the quantity of which remaining in the stomach formed a basis for computing the exact residue. I know that by means of the Rehfuss tube properly passed (feeling the tip strike the greater curvature) we can empty the stomach entirely. By this method we can therefore determine gastric motility accurately. The use of the old rice and raisin overnight residue method (rice and raisin particles will pass through a Rehfuss tube) is still a very good test of motility. My technic of a fractional gastric analysis includes the feeding of rice and raisins to the patient eight or ten hours before the test; complete emptying of the stomach by means of the Rehfuss tube or combined with a larger tube if rice and raisins remain in any quantity; the feeding of powdered cracker meal and water, making removals every fifteen minutes for two hours, and then removing the entire residue. We have thus a double check on gastric motility. In the x-ray examination it is necessary to evaluate the importance of the six hour residue. If the patient is in bed there is more apt to be a residue, or if the patient is nervous it will cause a pylorospasm. With different types of diet preceding the x-ray examination, the results will also be different, so that today I use a standard diet for two days preceding the x-ray series and after the six hour period for the remainder of the series.

DR. FRANK SMITHIES, Chicago: Anything which tends to improve our knowledge and which facilitates the securing of that knowledge certainly is to be encouraged. I wish to ask Dr. Beck a few questions. First, how did he arrive at the so-called normal residue? Was that arrived at by working on normal individuals, or was it arrived at by working on individuals who were ill? Second, what is the effect with respect to residue of this method on individuals in whom the procedure is repeated for several days? I think it is a well known fact that in all of these motor meal methods, one observes a decided difference if an individual is examined on several occasions, particularly when one is using a complicated apparatus which may have some effect with regard to interfering with normal motility. Third, what advantage has this method with its complicated apparatus, so difficult to keep clean, and requiring so many people to handle it, over a large calibered tube which I have shown empties a stomach completely, by the examination of many thousands of patients? Fourth, I think it has been demonstrated in clinics where a good deal of test meal work is done that in instances in which there is an actual pathologic condition in the stomach, any procedure which requires aspiration, and especially aspiration under considerable negative pressure, is likely to cause injury to the mucous lining. I have seen this occur in a number of instances.

DR. HARVEY G. BECK, Baltimore: Dr. Andresen spoke about the six hour barium retention. I made some comparative studies and there is no uniformity in the results obtained by the two methods except in duodenal ulcer. In duodenal ulcer, practically all patients who have more than 100 cc. residue have six hour retention. We did not displace x-ray studies for motility by this test. We examined the patients fluoroscopically as a routine. There is nothing complicated about the method. It consists simply in passing a tube in a laboratory equipped with the apparatus, and there is nothing formidable about it. It is very much simpler in my experience to use this method of suction than to use the suction method with a bulb, and we do empty the stomach, which gives us an idea as to the motility. With regard to the question of what constitutes a standard, I base that very largely on the opinion of physiologists and gastro-enterologists who state that the stomach should be emptied in two hours after a test breakfast of this character and that at the end of an hour it should not contain more than 100 cc. I have merely taken that as a basis. With regard to the effect of this procedure on the patient, every precaution is taken to control the psychologic influence. The test meals are given in the office and the patients are not disturbed afterward until the meal is removed. We do not claim anything for this method except its simplicity and practical results. From the litera-

ture we see the futile efforts that have been made in an endeavor to determine the motor capacity by means of a test meal. I frequently give a motor meal dinner including raisins the night before and check up in a simple, practical way by taking the test breakfast to determine the motility and the acidity at the same time.

ANTAGONISM OF GROWTH AND SEX HORMONES OF THE ANTERIOR HYPOPHYSIS *

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AND
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That the anterior lobe of the mammalian hypophysis liberates a hormone stimulating growth and essential for growth to normal stature would seem abundantly proved both by the work in the experimental production of gigantism [1] and in experimental hypophysectomy [2] accomplished during the last few years in this laboratory. We have also taken the important initial steps to secure the growth hormone in a sterile, easily absorbable and almost protein-free solution, steps which to some extent have been made the basis of recent communications from other laboratories.[3]

About two years ago Zondek and Aschheim [4] and P. E. Smith,[5] working independently, secured a totally distinct effect from the implantation of anterior hypophyseal substance—the induction of precocious sexual maturity in young mammals, mice and rats. The vaginal smear and behavior changes showed clearly that estrus had been induced. Examination of the young animals after they had been killed showed that the effect was induced by a remarkable stimulus to ovarian development, a stimulus resulting in the ripening of an unusually large number of ovarian follicles [6] and the liberation of eggs susceptible of fertilization. We have previously shown that the growth hormone induces lutein transformation in follicles in various stages of development, interfering therefore with ovulation by enclosing the ova in the abnormally constituted corpora lutea and preventing the occurrence of estrus during the time of administration of the hormone. It has also been possible for us to show that an absolute loss in weight of the testis with lowering of sex interest occurs when males are treated in the same way with the growth hormone.

It would appear, therefore, that contrasted effects on the sexual system are secured when anterior hypophyseal substance is administered in various ways. Precocious maturity had been secured by the implantation of perfectly fresh, warm rat glands; growth by the administration of various extracts of 8 hour old bovine glands. The markedly different results from these two procedures could have been due to the freshness or staleness of the glands used, the source of the glandular material (rat or bovine), or the method of preparation of the material. We can show that the latter explanation is the correct one. Both hormones reside in anterior hypophyseal tissue from either source, rat or bovine, and specific extractives can be used for either. The growth hormone cannot easily escape from the relatively large tissue fragments used in the implantation method, but it can readily do so when this tissue is merely triturated, and extraction of rat glands in a way identical with that employed in the bovine growth extracts showed a similar abundance of the growth hormone in the tiny glandules. If the implantation method is employed (i. e., whole rat or similar sized portions of bovine glands introduced intramuscularly), double the weight of substance essential for satisfactory growth extract will not confer growth. On the other hand, implanted bovine glands stimulate precocious sexuality as do rat glands and but little diminution in this hormone occurs with six hours "aging" after the death of the donor. It has furthermore been possible for us to secure the maturity-provoking or sex-stimulating anterior hypophyseal hormone by extracting this tissue in ways different from that employed for the growth hormone, and successful extracts of the second hormone had been employed by us before the very recent publications of Zondek and Aschheim [7] indicating partial purification of this substance.

Just what is the relation of these hormones to each other? Aschheim and Zondek in their last publication state frankly that they are as yet uninformed as to the growth promoting potency of the purest form of the hypophyseal sex hormone secured by them and hence leave entirely open the question of its relation to the growth stimulant. We have found that, in fact, most extracts containing the growth hormone possess varying amounts (usually slight amounts) of the maturity-provoking substance. That we have to do with two distinct substances rather than a single secretion of the anterior lobe would seem to be abundantly established by our experience during the last two years, which may be briefly summarized as follows:

1. Alkaline aqueous extracts [8] of the anterior hypophysis are maximally effective in stimulating growth in

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* From the Anatomical Laboratory of the University of California.
* Aided by grants from the Committee for Research in Problems of Sex of the National Research Council and from the Board of Research of the University of California.

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4. Zondek, B., and Aschheim, S.: Deutsche med. Wchnschr., Feb. 19, 1926; Ztschr. f. Geburts. u. Gynäk. **90:** 372, 387, 1926.

5. Smith, P. E.: Proc. Soc. Exper. Biol. & Med. **24:** 131 (Nov.) 1926. Smith, P. E., and Engle, E. T.: Am. J. Anat. **40:** 159 (Nov.) 1927.

6. We are in agreement with the Berlin investigators in recognizing that this treatment gives us not merely the stimulation of follicular growth but also the luteinization of the follicle wall—a phenomenon not emphasized by Smith. It is a peculiarity shared in common with the ovaries of older animals treated with the growth hormone—the picture first seen by Evans and Long.

7. Zondek, B., and Aschheim, S.: Klin. Wchnschr. **7:** 831 (April 29) 1928.

8. For a long while our standard procedure was as follows: To fresh bovine anterior lobe tissue is added an amount of ocean sand equal to half the weight of the tissue, and the whole is ground to a smooth paste; distilled water is now added in twice as many cubic centimeters as are represented by the weight of the paste in grams; an aqueous two tenths normal solution of sodium hydroxide is now added to the aqueous extract in amount equal to three eighths of the volume of the latter. The alkali must be allowed to extract at room temperature at least for a quarter hour and may be left at 0 C. for twelve hours. It is neutralized with two-tenths normal acetic acid, which is first allowed to give the first clear yellow with phenol red as indicator and then titrated with alkali until the first distinguishable pink appears in the yellow (p_H 6.6 to 6.8). We now centrifugalize the solution, and the resultant supernatant pale pink, slightly cloudy fluid is used for injection. The fluid contains about 1 per cent of protein and is potent for adult females in from 0.125 to 0.25 cc. intraperitoneal daily doses. If a pinker end-point, salmon pink, is chosen (p_H 7.2 to 7.4) and the solution is not centrifugalized, the resultant fluid while higher in protein is twice as rich in growth hormone and is valuable for many biologic studies. Freedom from micro-organisms and still further reduction in the protein moiety can be best secured by the following modifications of the procedure: The paste is extracted with lime water (1 gram of paste to 10 cc. of saturated calcium hydroxide, neutralized with tenth normal sulphuric acid to P_H 7.4 and centrifugalized twenty minutes at 3,400 revolutions; the supernatant fluid rapidly passes the finest Berkefeld filter; its protein content is from 0.1 to 0.15 per cent and it is potent in 0.5 cc. doses.

adults at levels which never provoke maturity in young animals.

2. Acid aqueous extracts of the anterior hypophysis are effective in provoking maturity in young animals at levels which do not stimulate growth in adults.

3. Alkaline and acid extracts of the human placenta have much of the maturity-provoking hormone but little of the growth hormone.

4. The urine of pregnant women has the maturity-provoking hormone but not the growth hormone.

5. The maturity-provoking hormone passes the Berkefeld filter in acid solution but the growth hormone does not do so; the maturity-provoking hormone cannot be adsorbed by kaolin in acid solution but the growth hormone is so adsorbed.

6. The maturity-provoking hormone is definitely somewhat more stable to incubation in the presence of acid.

7. As regards their effect on the gonads of immature animals, a rather clear-cut antagonism can be demonstrated to exist between the sex and growth hormones—the special subject of the present paper.

We have carefully determined the level at which one must administer adult rat anterior lobe tissue intramuscularly daily to 25 day old females (weaned four days previously) in order to induce sexual maturity in the ensuing three days. Some 12 to 15 mg., fresh weight, daily of this substance gives sexual maturity in the majority of cases on the third day and in all cases by the fourth day after treatment has begun.[9] Many young females have been treated daily in this way with the favorable outcome already mentioned, and their litter sisters while treated identically in this respect (i. e., implanted daily intramuscularly with appropriate amounts of adult rat anterior hypophyseal substance) were also given 0.5 cc. of a neutralized aqueous alkaline extract of bovine anterior tissue known to be potent in the growth hormone. None of these animals matured sexually in the required time, nor did histologic examination of their ovaries show even beginning growth of the follicular system—not to say approach to ovulation or the formation of corpora lutea. Another group of litter sisters of the previous group was treated with the growth fluid alone in order to see whether it would have had deleterious effects on the sexual system, no evidence for such injury having been secured.

It appears, therefore, that anterior hypophyseal extracts giving well marked growth effects nullify the maturity-provoking effect secured by other ways of administering anterior tissue. That it is the growth hormone in our alkaline aqueous extracts showing this antagonism to the sex-stimulating effects of implants is indicated, we believe, by the following lines of evidence: 1. Alkaline aqueous extracts of other tissues (muscle, kidney, brain) when administered in the same or greater quantities do not nullify or influence the maturity-provoking effects of implants. 2. Destruction of the growth hormone by heating a solution containing it robs this solution of its power to oppose the effect of implants.

The antagonism of the sex and growth hormones was also indicated by the work of Smith,[10] who clearly showed that the repair of hypophysectomy, which can be accomplished by hypophyseal implants, is prevented when the growth hormone is injected simultaneously with such implants,[11] although he ventured no explanation of these effects.

It is entirely possible that, conversely, the marked effect of the growth hormone in initiating sudden growth in adult animals can be nullified by sufficiently high levels of the sex hormone, yet on this point we have as yet no evidence.

IDENTIFICATION OF TWO DISTINCT SUBSTANCES FROM THE ANTERIOR HYPOPHYSIS

It would appear well established from the foregoing that the mammalian anterior hypophysis secretes at least two distinct substances which we are now fortunately on the road to being able to characterize precisely, facts in consonance with the well known occurrence of two distinct granular cell types, the basophils and the eosinophils in this little organ. The coincidence of acromegalic growth with eosinophilous adenomas has been abundantly pointed out by Bailey and Davidoff[12] and others, whereas G. Van Wagenen[13] in this laboratory has established a definite relation of the basophilic cells to the gonads, the castration cells, for instance, being always modification products of the basophil.[14] In 1923, P. E. Smith[15] in this laboratory showed that nature gives us a partial separation of the eosinophilic and basophilic cells in their distribution in the pars anterior of the bovine gland, a dark red central strip indicating an area of relative abundance of the basophils when compared with peripheral zones in the gland. Smith administered extracts made from these two portions of the gland to hypophysectomized tadpoles and was able to demonstrate relatively more of the growth effect in the cortical zone extracts and of the thyroid affecting substance from the central extracts. It is highly interesting that the maturity-provoking hormone is higher in implants from the central dark strip of the bovine gland than from peripheral parings, as we have been able to show by a considerable number of experiments.

SUMMARY

1. Two hormones are secreted by the pars anterior of the mammalian hypophysis, one required for normal growth and the other for normal development of the gonads, thyroid and suprarenal cortex.

2. As regards its effect on the sexual system, the second hormone can be completely nullified by simultaneous administration of the first—the growth substance. Evidently nature has provided the necessary nice adjustment in the relative amounts of the two substances secreted. That the growth of animals is usually accomplished before the attainment of sexual maturity may therefore plausibly be due solely to the early predominance of the growth hormone.

3. Our experiments are in consonance with the identification of the two hormones of the anterior gland from the basophilic and the eosinophilic, two sharply separated cell types.

9. We will not delay the reader with protocols; the groups in question totaled more than fifty animals, the total work here reported having been done with many hundred animals.

10. Smith (footnote 2, fourth reference).

11. Although the repair of the thyroid and suprarenal cortex is not opposed by the growth fluid, it would be premature to urge therefore the existence of a third hormone in the implants. It will be important to ascertain whether the repair of these other organs can be effected by a highly purified state of the sex hormone.

12. Bailey and Davidoff: Am. J. Path. **1**: 185, 1925; Cushing, Harvey; and Davidoff, L. M.: Monograph 22, Rockefeller Institute, April 1, 1927.

13. Van Wagenen, G.: Anat. Rec. **29**: 398, 1925.

14. We are as yet inadequately informed as to the affinities of the pregnancy cells which are described as related to the chromophobe cell type.

15. Smith, P. E., and Smith, Irene B.: Anat. Rec. **25**: 150, 1923.

FRACTURES OF METACARPALS AND PHALANGES *

PAUL B. MAGNUSON, M.D.
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There has always seemed to be in the minds of the medical profession a feeling that fractures of the small bones of the hand were more or less inconsequential, when as a matter of fact it is true that in persons who most frequently sustain fractures of these small bones the disability is very great when it comes to affecting earning power. They of course most frequently occur in workmen and are the result practically always of direct violence in which the structures surrounding the fracture are injured as well as the bone. As in all fractures, the contour of the bone and the attached muscles must be constantly in mind in determining the best form of treatment, and the muscles attached to the metacarpals and phalanges are no exception when one is dealing with fractures of these bones.

In the case of the metacarpals there are attached on each side of each metacarpal the interosseus muscles, which originate along the base and shaft on each bone and are attached anterior to the midline on the base of the first phalanx. These muscles act constantly as flexors, and as a matter of fact are flexors which do their jobs unusually well for twenty-four hours a day, and in persons who use their hands in more or less hard tasks during a considerable part of each day these muscles attain no mean strength. With the muscles acting as flexors, but at the same time pulling almost in the long axis of the bone, traction on the distal end of the bone is considerable in the effort to flex the distal fragment. If the fracture is oblique there is a shortening plus a flexion. If the fracture is transverse and the ends are brought into good reposition, then the effect is only that of flexion. This produces angulation of the shaft, the angle pointing directly backward toward the dorsum, because the muscle balance on the two sides of this bone is equal. The angle backward does two

Fig. 1.—Diagram of mechanics of pull exerted by interosseus muscle (*A*).

things: it makes the extensor tendons run around two sides of a triangle instead of straight across the back of the bone, and it throws the distal head of the bone into the palm of the hand and shortens the bone, which results in a prominence in the palm of the hand over the ball, which throws an uneven pressure on that point when the patient grasps a hard substance after the fracture is healed (figs. 1 and 2). One might as well carry a marble in the palm of the hand between the handle of a tool and the head of the bone as to have the head of the bone protrude like a marble under the pad in the palm of the hand, which is so essential to comfort in lifting or handling hard objects. The flexion produced in the distal fragment produces flexion in the finger, so that the patient is either unable to bring the finger into full extension with the other fingers of the hand, or, if he does, it is necessary for him to hyperextend the metacarpophalangeal joint. He cannot bring the finger into full flexure because the callus on the back of the hand, as a result of the angulation of the metacarpal shaft, shortens the tendon and weakens the grip in this finger. When the inability of the patient to bear weight pressing into the palm of the hand because of the prominence of the distal head of the metacarpal is added to this, it is easy to see that a serious disability may result from an insignificant looking fracture in the shaft of the metacarpal.

In splinting these fractures, the contour of the bone is necessarily taken into consideration. The dorsal surface of the metacarpal is almost a straight line. The

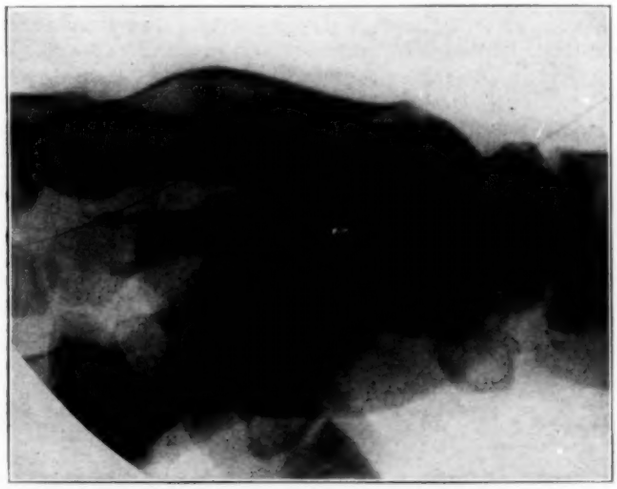

Fig. 2.—Healed fracture of first metacarpal, illustrating deformity produced by pull of interosseus; distal head of the bone thrown anteriorly into the palm of the hand, shortening the shaft; angulation of the fragment pointing dorsally over which the extensor tendons must run.

flexor surface of these bones is distinctly arched in shape. It would therefore seem apparent that the best method of treating them would be posterior splinting, as the tendency to displacement is one of flexion. A dorsal pad over the point of fracture with a palmar pad over the distal head would be, and as a matter of fact is, the best form of treatment in fractures in which the fractured surface is transverse enough to give real end bearing. In fractures in which the surface is not transverse enough to give end bearing, traction must be applied. This can be done in several ways: by a banjo splint; that is, a wire splint extending around the hand beyond the end of the finger and fastened for countertraction on the wrist, or with calipers, or both. Mock and Ellis [1] have described a caliper which can be used on the metacarpals and phalanges and can be adapted to a banjo splint; or the caliper may be held or traction may be obtained by the application of Sinclair glue over a finger bandage that has been applied to the whole finger. The method of obtaining traction by suturing through the finger nail seems to me entirely unpractical because the matrix of the nail is too tender a tissue to warrant enough traction to overcome the displacing effect of the interossei. In a large number of cases the posterior splint, which can be made of an ordinary wooden tongue depressor padded with felt, will be found much more practical. If traction is necessary, it may be devised and made strong enough to meet the requirements of the case, and nothing short of a perfect alinement should be satisfactory.

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Mock, H., and Ellis, J. D.: Treatment of Fractures of the Fingers and Metacarpals, with Description of Authors' Finger Caliper, Surg. Gynec. Obst. **45**: 551 (Oct.) 1927.

Fractures of the phalanges are no less important than fractures of the metacarpals, and they also offer a number of mechanical problems to be met by a full understanding of the anatomy. Fractures of the base phalanges are especially difficult to treat because of the opposing action of the interossei and the lumbricales. The interossei, as previously stated, act as flexors on the proximal fragment. The lumbricales, however, which are attached to the fascia and the ligaments of the middle joint, act as extensors when that joint is dorsal to the midline. Whereas, if the joint is thrown forward they act as flexors of the base phalanx. In fractures of the shaft of the base phalanx, then, the interossei flex the base fragment and the lumbricales extend the distal fragment, which results in an anterior angulation of these fragments, which angulation throws the fractured surface of the bone against the surface of the flexor tendons (fig. 3). If this deformity is not overcome, there is union of these fragments with the distal end and distal half of the base phalanx in extension and with the proximal fragment of the base phalanx in flexion. The flexor tendons, which run over a knob of callus on the flexor surface of the base phalanx, interfere with the action of the tendon because of adhesions and of pressure. If the finger is flexed the proximal half of the base phalanx can be brought into flexion, but the distal half of the base phalanx and the two other phalanges are in extension so that the finger

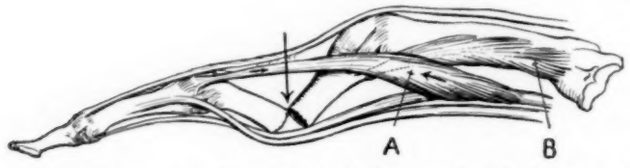

Fig. 3.—Diagram of pull of the lumbricalis muscle (*A*), illustrating extensor action of the distal fragment of the base phalanx with deformity produced with flexor tendon of the finger pushed forward by the fragments at point of fracture; *B*, interosseus muscle.

cannot be brought to the point of contact with the palm, and when the person tries to lift a hard object he finds that the anterior angle at the point of fracture pinches the soft structures, namely, the tendons and skin, subcutaneously, between the angle of the bone and the hard object in the hand, and that he has lost part of his grip because of the inability of the flexor tendons to glide smoothly through their sheathes, plus the inability of the finger to close because of hyperextension of its distal part. This weakens the grip and also gives pain.

In these fractures there is a choice of applying extension or of attempting treatment by flexion of the finger or fingers over a roll in the palm of the hand. If the distal fragment is brought forward of the midline into flexion, the lumbricalis muscle is relaxed and the extensor effect is done away with. Traction can be made until the ends of the fragments are in apposition, after which time the finger can be brought forward into flexion and maintained in semiflexion with a roll in the palm of the hand, with a short splint on the dorsum of the injured finger to aid in maintaining position. A simple roller bandage in the palm of the hand with the finger bandaged over it is frequently sufficient, but these may also be treated by a banjo splint, traction applied with a Mock's caliper or traction with Sinclair glue on a roller bandage, and maintained by rubber bands between the fingers and splint. These bands can be tightened or loosened as may be indicated for the individual case.

CONCLUSIONS

Fractures of the metacarpals and phalanges are capable of producing disability far in excess of their apparent importance, because they are components of an important member, and if not properly replaced and maintained in position they become a serious handicap to the member of which they are an important part.

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ABSTRACT OF DISCUSSION

Dr. H. Earle Conwell, Birmingham, Ala.: The importance of proper care and the proof that it has not been carried out in many injuries to the phalanges and metacarpals is plainly brought before us when we see the poor functional results and the great economic loss which is present so very often in even the minor types of injuries to the hand and fingers. Too much attention has been given to the treatment of the major fractures, thereby neglecting the fractures of the small bones of the hand. If our attention is more evenly focused or distributed generally over all the fractures, we will then derive more favorable functional results, as well as a great improvement so far as the economic saving is concerned. Dr. Magnuson has very ably reviewed the anatomic structures and the difficulties encountered in treating fractures of the hand and fingers. I agree with him in practically every respect. However, in injuries to the soft structures of the hand, I feel that the posterior splinting becomes a handicap. This type of case demands different methods of treatment as the complications arise. Generally speaking, treatment of fractures of the hand and phalanges demands (1) early and proper reduction, and (2) closed reduction. This should always be attempted, and if one fails to secure good anatomic position open reduction should be carried out. This should not be done, however, until a fair trial at the closed method has been given. Open reduction can easily be done under local anesthesia. Early motion and massage with removal of all fixation dressings as soon as possible should be carried out.

Dr. Paul B. Magnuson, Chicago: The injury to the soft parts in fractures of the metacarpals and phalanges, as Dr. Conwell has pointed out, is extremely important because of the very superficial position of the tendons, especially on the dorsum of the hand—though when there is a crushing injury these tendons are frequently interfered with. When this occurs in the metacarpals, I think the caliper in the distal head of the metacarpal offers a number of advantages. If the tendons are not completely severed, but are injured enough so that adhesions will probably form very quickly, then the caliper offers the advantage of being able to flex the finger from time to time and of keeping these tendons moving so that the adhesions will not become firm.

The Ergot Question.—Much of the dissatisfaction with the results from ergot administration has its explanation in the use of preparations which do not contain the active substances. . . . If the action of ergot is desired, preparations should be used which have been shown by the proper type of assay to be active. . . . The active substances in ergot or its preparations are histamine, tyramine, ergotoxine and ergotamine. All of these substances will stimulate the isolated uterus, but there is no satisfactory clinical evidence for the value of tyramine or ergotoxine in obstetrics or gynecology; the evidence for histamine is somewhat questionable; adequate clinical as well as experimental evidence exists to justify the conclusion that the alkaloid ergotamine is the most important constituent of ergot, and the one whose presence in ergot preparations should be insured. An examination of a number of the ergot preparations available in the market reveals that only the U. S. P. fluidextracts contain important amounts of the active alkaloids. Only the official fluidextract or preparations definitely shown by proper methods of assay to contain the alkaloids of ergot should be used in medicine.—Nelson, E. E., and Pattee, G. L.: *Am. J. Obst. & Gynec.*, July, 1928.

ACTION AND CONTROL OF THE PERIPHERAL ORGANS OF SPEECH

PSYCHOLOGIC PRINCIPLES, AND A SCIENTIFIC BASIS FOR METHODS OF TRAINING*

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The function of talking is subject to various disorders requiring treatment through educational methods, and is continually being trained to better accomplishment for artistic purposes of speaking and singing. All such efforts should be based on a clear knowledge of the psychophysiologic principles through the employment of which the peripheral mechanism of speech acts, and through the elaboration of which it may best be improved in action. In view of the recent discovery of new physiologic knowledge that throws definite light on old difficulties experienced in the training of speech and voice, a reexamination of such principles is called for.

CHILDHOOD SPEECH

The acquirement of the ability to talk is the psychophysiologic procedure of learning to operate accurately and skilfully certain anatomicophysiologic mechanisms, the mechanisms through the intelligent control of which the sounds of talking may be produced. Behind the effort to operate these mechanisms must be a human type of mind. The procedure is much the same in each developing child. With his beginning capability and alertness to see and hear, to inquire into new things, to be active in mind and muscle, to imitate and emulate, he attempts to play the sounds of speech that enter his ears from the mouths of others on his speech machine. In this attempt his mental efforts, with reference to the speech mechanism, are directed, first, to the visualization mentally of the sounds he would reproduce; secondly, to the endeavor so to operate his speech mechanism as to produce such sounds, and, thirdly, to the carrying on continuously of a mental process of comparison between the results of his own repeated and gradually improving efforts and the sounds he is attempting to reproduce. In the course of months or years, the outcome, if he succeeds, is normal accuracy and skill in handling his speech mechanism.

But not all children succeed. The natural difficulties of learning to talk are serious. In the effort to produce a normally acting speech mechanism, important handicaps must be overcome. The first of these is the immaturity of the mind of the child. His capabilities of attention, concentration and comparison, and his appreciation of the need of employing these faculties carefully are childish. The second handicap is the incompleteness of his knowledge of the peripheral speech mechanism and of its manner of action. And the third important handicap of the child in learning to control the speech machine for talking is the hidden and complicated manner in which elemental speech sounds come to his ear. The years of constant persistence usually required to overcome these handicaps tell clearly the story of their seriousness.

Behind the effort of the child in learning to talk is also a childish limitation with respect to ideals. His mind is set closely on the phonetics of speech and therefore on the action of the oral articulative function. His ideals are narrowed down to phonetic differences. He lacks breadth of idealism that includes not only the qualities that determine the phonetics of spoken sounds but also the qualities that make for naturalness, roundness and beauty of tone. This concentration of the mind of the child on the oral acts of talking results in two definite imperfections of habit which to a greater or lesser degree pervade the ordinary, untrained voice and speech of adult life. One of these is the holding of the chest action of talking unduly in the background. The other is a tendency to excessive muscular action in the entire orolaryngeal mechanism.

The production of vocal sounds is dependent on the closely cooperative action of three psychomuscular systems—that of the chest, that of the mouth, throat and larynx, and that of the soft palate.

VOICE AND SPEECH DEFINED IN 1908

In 1908, the late Dr. G. Hudson Makuen wrote the following interesting definition of voice and speech:

> Speech has been defined as articulated voice. Then, you will ask, What is voice? I have defined voice as being a column of breath set in vibration by its own impact with the vocal bands and reinforced by its diffusion through the various resonators into the surrounding atmosphere. Voice so produced is the material of which speech is made, the cloth from which the garment is cut, the molten lead from which the bullet is molded. There can be no audible speech without voice. I say "ah"; that is voice. Now I take that voice and with an entirely different mechanism articulate it—that is, mold it into syllables and words—that is speech. You will observe, then, that speech is produced by a combination of two distinct mechanisms, the vocalizing mechanism and the articulating mechanism. In the first are included the vocal bands and all the respiratory organs below them, and in the second are the upper portion of the larynx, the pharynx, the palate, the tongue, the teeth and the lips. The resonators may be regarded as belonging to both mechanisms, for they are used to reinforce the primary tones of voice and to give to each vowel sound its characteristic quality. These two mechanisms may work independently of each other. To illustrate this I will utter a sentence without voice. You will observe that I simply make molds with the articulating organs. Now I will utter the same sentence with voice—that is to say, I will pour voice into the molds—and the result is speech.

PSYCHOPHYSIOLOGY OF THE OROLARYNGEAL MUSCULAR MECHANISM

Undoubtedly the impact of the outbreathed air against the vocal bands produces the primary vibrations of voice, as Dr. Makuen states. Undoubtedly these vibrations, influenced according to the principles of resonance, are modified by the spaces that lie above the vocal cords, and afterward pass out into the outer atmosphere as the human voice. Undoubtedly also the articulative molds made by the mouth organs determine primarily, but not wholly, the elemental sounds of speech.

And yet, Dr. Makuen's conception of the physiology of both voice and speech production fails in fundamentally important respects to satisfy our present knowledge.[1] In spite of his statement that the two mechanisms, that of the larynx and that of the articulative organs, are "entirely different" he seems, even at this earlier date, to have vaguely sensed what is now clear; namely, that the muscular mechanisms of voice

*Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Kenyon, E. L.: Significance of the Extrinsic Musculature of the Larynx, J. A. M. A. **79**: 428 (Aug. 5) 1922; A Broader Approach to Unsolved Problems in Laryngeal Action, Laryngoscope **34**: 901, 1924; Relation of Oral Articulative Movements of Speech and of Extrinsic Laryngeal Musculature in General to Function of Vocal Cord, Arch. Otolaryng. **5**: 481-501 (June) 1927.

and of articulation are not two "entirely different" mechanisms but together constitute the linear and functional extremes of one complex physiologic organization.

Above the hyoid bone and attached to it are the tongue and the lower jaw with their muscles; these may be called for descriptive convenience the oral system of muscles. Between the skull and hyoid bone above, and the sternum and scapula below, lies the thyroid cartilage of the larynx. Connecting these structures is an extremely elaborate muscular system, whose purpose in talking is to move properly the thyroid cartilage on the cricoid, for the purpose of aiding and determining details of vocal cord adjustment. This also for convenience may be called the extrinsic muscular system of the larynx. Attached to the laryngeal cartilages alone is the intrinsic laryngeal muscular system, which directly moves the vocal cords.

The musculature which I have called the oral system is in truth a closely interrelated adjunct of the extrinsic laryngeal system. The intrinsic muscles of the larynx are related to the extrinsic system in a manner similar to the relationship of the oral musculature to the extrinsic system. The extrinsic musculature carries, as it were, the influence of the oral mouth molds to the intrinsic muscles, in moving the vocal cords for vocal sounds. Each—oral, extrinsic or intrinsic—is capable of action for speech purposes only as a necessary adjunct to the combined purposeful movement of all. Thus the articulative and laryngeal functions are not two and separate, but are one and are indissolubly united in action.

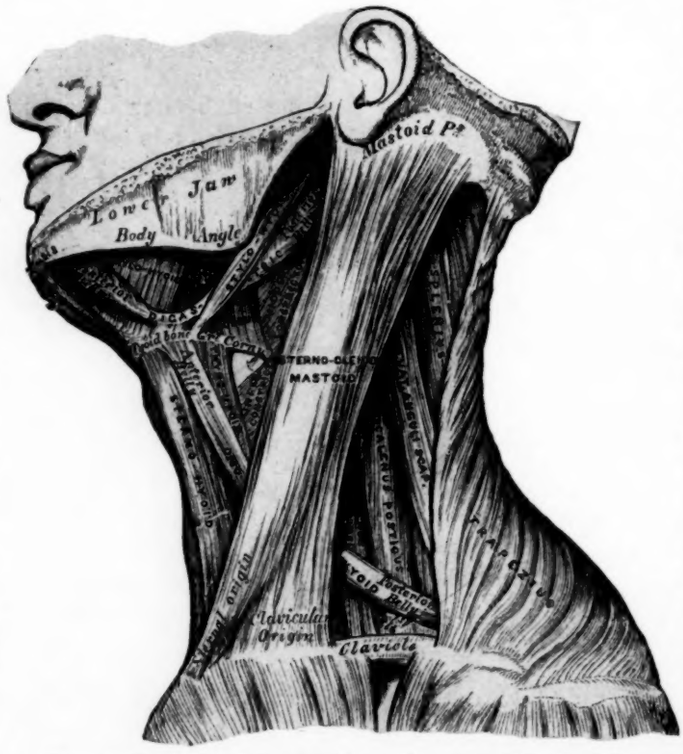

Fig. 1.—Complexity of the musculature of speech. Only the muscles of the tongue are directly controllable. From Gray's Anatomy.

Preliminary to the approximation of the vocal cords for the production of voice, the thyroid cartilage of the larynx must first be adjusted in a definite manner to the cricoid cartilage, and be temporarily fixed and steadied in a definite position. But before this can be accomplished, the position of the lower jaw and tongue must be established. This placement of the lower jaw and tongue is accomplished by making the molds of any elemental speech sound. Then, from the standpoint of that oral position, the up-pulling and down-pulling muscles of the thyroid cartilage—the extrinsic system—are able to coordinate their activities so that the proper adjustment of the thyroid cartilage on the cricoid can be attained. Thus the musculature that fixes the mouth mold is actually an essential precursor of the muscular action that determines the details of vocal cord approximation.

After the orolaryngeal mechanism has entered into action (including the proper approximation of the vocal cords), and the vibrations due to the impact of the out-breathed air against the vocal bands have been produced, the resulting vibrating air passes out through, and is modified by, the mouth mold produced as a factor in the same vocal cord action, which mold continues in position until the vocal cords have ceased to vibrate for that sound.

The articulative function thus takes on a new importance. Let us inquire more particularly into its nature. Dr. Makuen made soundless molds with his mouth organs and called these placements of the mouth the function of articulation. In the old conception he was right. The making of mouth positions is the fundamental necessity of speech production. This act is performed by muscles over which one may exercise conscious direct control, and this capability of conscious direction over the muscles that produce mouth molds and mouth movements required for talking lies at the root of the possibility of human speech.

But the making of mouth molds is but the first step in the function of articulation. After the larger (potentially conscious) movements required for production of the mouth molds (like opening the mouth for the sound "ah") have been made, another part of the act of articulation begins. This act serves, first, to anchor steadily the organs of the mouth in the position of that particular mold, and, secondly, as a part of the same complex muscular act, to adjust by the extrinsic musculature the thyroid cartilage on the cricoid in the position required for the approximation of the vocal cords for that sound. The articulative function involves also still another, a purely psychologic act. Behind all initiation of speech effort must be the purpose to produce elemental speech sound. If this purpose is not definitely carried out, neither the adjustment of the thyroid cartilage nor the approximation of the vocal bands can be correctly made for the production of an elemental sound of speech. While the mouth molds for talking may be made by direct conscious muscular control, the oro-extrinsic muscular action is possible only as the result of the indirect psychologic purpose to produce a vocal sound. Therefore the psychologic visualization of the sound to be produced must be considered an essential factor of the articulative function. The complete psychophysiologic act of articulation includes, then, first, the psychologic visualization of the sound to be produced; secondly, the making of the mouth mold, and, thirdly, the setting into action of the oro-extrinsic laryngeal musculature for the adjustment of the thyroid cartilage on the cricoid for that particular sound. Not until all of these acts have been accomplished is it possible for the vocal cords to produce voice in talking.

In speech the vocal cords themselves, moved by their own intrinsic laryngeal musculature, also respond not to direct but only to indirect psychologic control, their action being also dependent on the psychologic purpose to produce sound. To make this entire thought more clear, let me mention the coughing function. If one consciously conceives of coughing, the chest muscles and the mouth organs assume their necessary position, the oro-extrinsic musculature theirs, and, finally, the vocal cords completely approximate in air-tight closure, immediately (when the chest has fully contracted) to open again widely. But, if the individual conceives of making a particular articulative sound, the proper mouth mold is formed, the oro-extrinsic musculature takes on action for that sound, and, finally, the vocal cords enter into the partial approximation that results in the sound desired. Both the oro-extrinsic musculature and the vocal bands respond whether for animal or for vocal function, not directly, but indirectly, in accordance with the purpose of the individual to produce the particular functional result that involves the action of the vocal cords.

Certain central nervous systems of control for these complexly involved muscles, similar to those for the sphincter and expulsive muscles of the urinary bladder, must exist. This psychologic control of the oro-extrinsic-intrinsic muscles for speech production is susceptible of a wide range of variation under the direction of the conscious mind applied by the mental act of picturing the kinds of sound desired.

The psychophysiologic manner of orolaryngeal action for speech production just described applies as well for whispered as for loud sounds. Whispered voice calls for a difference in certain details and in the intensity of muscular effort, as compared to such requirements for the loud voice, the difference being applied to the entire musculature, from the mouth to the vocal cords. The action of the orolaryngeal muscles for the production of the loud or the whispered voice is determined by the thought purpose of the individual to produce on the one hand a loud and, on the other, a whispered sound.

Fig. 2.—Position of soft palate in the production of the oral sounds of speech. From Gutzmann: Physiologie der Stimme und Sprache.

"VOICE" AND SPEECH DEFINED

In the light of this newer knowledge, let us ask, What is voice and what is speech? Voice is still exactly what Dr. Makuen described it to be, "a column of breath set in vibration by its own impact with the vocal bands and reinforced by its diffusion through the various resonators into the surrounding atmosphere." But this description conceived of two independent acts, one for vocal cord approximation and the other for shaping the mouth resonators (molds). But now we know that the approximation of the vocal cords on which voice production depends is a part of the very complex muscular act that determines the mouth molds that are to receive and modify through the influence of resonance these very vibrations from the vocal cords. The production of voice and its modification by mouth molds are one act in conception and one act in execution. Speech is voice produced when the simultaneous action of the organs of the mouth and of the orolaryngeal mechanism generally is conceived and executed for the purpose of producing speech sounds. In talking, the idea of voice involves especial consideration of such qualities of vocal sound as loudness, pitch, clearness, beauty and roundness, while the idea of speech requires especial consideration of those peculiarities of vocal sound that serve to convey distinction between the elemental sounds of speech.

Fig. 3.—Position of soft palate in the production of the nasal sounds of speech. From Gutzmann: Physiologie der Stimme und Sprache.

Is voice possible without speech? Undoubtedly. Voice, however, is impossible without a preliminary coordinated, definite action of the entire oro-extrinsic muscular mechanism. Voice without speech is produced when the oral part of the combined oro-extrinsic muscular mechanism enters into some manner of definite and fixed action that is not called for by speech, or when some vocal sound of speech is produced alone without the intention of talking.

Dr. Makuen designates the result of vocal cord vibration, voice, as the "cloth," and the articulative position as a separate "pattern" which shapes the "cloth." According to this conception, the mechanism of the larynx produces continuously an indefinitely large mass of vocal "cloth," while an independent mechanism, that of the mouth, continuously reshapes sectionally this mass of "cloth" from the larynx into articulate "patterns." But in our present understanding, vocal cord action producing vocal "cloth," and mouth mold, determining the "pattern," are mentally conceived and executed simultaneously as a unit. In other words, the "pattern" of mouth mold always limits and determines the kind and shape and extent of the "cloth" that shall be produced by the vocal cords. Speech consists of making repeated small "patterns" of vocal "cloth" in the larynx, each "pattern" resulting from a definite mental visualization of the sound desired, and each being muscularly determined by the act of articulation. Whereas Dr. Makuen placed the "cloth" of vocal cord action first, and "patterned" it by the mouth mold afterward, our present conception places the "pattern" of mouth mold first, and confines the kind and size of the "cloth" resulting from vocal cord action strictly to the limits determined by the "pattern."

The musculature of the soft palate that determines the oral or nasal quality of speech sounds, while not absolutely independent muscularly of the orolaryngeal organs, is, nevertheless, susceptible essentially of independent control for speech purposes. The muscular

interdependence of the palatal and orolaryngeal systems of muscles is found (1) in the attachment of the palatoglossus muscle to the base of the tongue, and (2) in the attachment of a part of the palatopharyngeus muscle to the thyroid cartilage. The exact significance of this muscular interdependence is at the present time not known, but, in view of the great number of similar and more important extrinsic muscles, it cannot be of determining importance. The open or the closed position of the palate is possible for any vocal sound, whether loud or whispered, and whether or not a sound of speech.

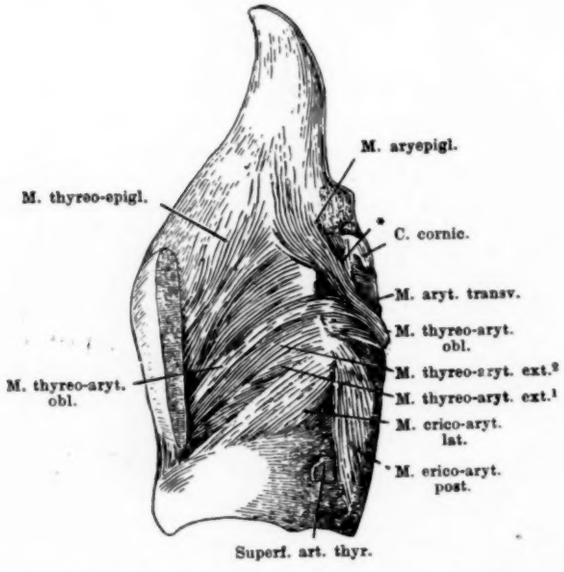

Fig. 4.—Complexity of the thyro-arytenoid muscle. From Gutzmann: Physiologie der Stimme und Sprache.

The action of the muscles of the soft palate cannot directly be controlled. Its action in speech is dependent on the psychologic purpose, whether to produce a sound of oral or of nasal quality.

THE PSYCHOPHYSIOLOGIC CONTROL OF THE SPEECH MECHANISM

Each individual mechanism of voice and speech possesses an ideal standard of action resulting in its greatest possible ease and effectiveness of vocal attainment. It is toward this ideal that all effort at correction of the performance of a seriously disturbed mechanism, or for improvement in vocal action generally, must be directed. The effort calls for an understanding of principles, and with them as a basis the building up of intelligently directed efforts of control.

The relation of the chest to the production of voice is comparable to the air pressure system that sets the strings of a wind musical instrument into vibration. The chest musculature is the power system of the vocal machine. Its purpose in speech and voice production is to insure a steady and adequate air pressure against the vocal cords.

Psychologically the muscles of the chest are under direct conscious guidance. Management of the chest musculature for vocal purposes is limited only by its natural physical structure, by the strength of its muscles (under training), by the extent and trueness of our knowledge of the possibilities of chest management and, finally, by our skill (under training) in its muscular control for speech and voice production.

Psychophysiologically the chest musculature is also susceptible of control independently of other cooperating muscular systems, even while speech or voice is being produced. The cooperation between the chest and the orolaryngeal systems of muscles in speech or voice production must be extremely intimate. And yet, each of these two muscular systems is susceptible of that independence of controlled action which is necessary to the best cooperative attainment of each. Interdependent cooperation, but independent individual control, leads to the highest success in the action of these two complex and closely interrelated muscular mechanisms.

With respect to the orolaryngeal mechanism of speech, the primal goal of ideal control consists in the attainment of vocal cord action that is true and unhampered for the production of each individual sound. To attain this end constitutes perhaps the most important single problem in vocal training.

In the past, the *bête noire* of the vocal trainer has been (and for that matter still is) tension of the oral muscles. By tension is meant intensity of muscular action that is in excess of the requirement for the function in hand. Why tension of the mouth muscles should so impair vocal result was not known until the intimate relation between the oral and the laryngeal systems of muscles as described was discovered. Unhampered vocal cord action depends on the attainment of such perfect balance in the control of the oro-extrinsic muscles for any sound that the intrinsic vocal musculature is completely free to do its work without extrinsic interference. Tension in the oro-extrinsic muscles tends, more or less seriously, dependent on its degree, to render impossible the kind of cooperation on the part of the intrinsic musculature that is required to bring about freedom of vocal cord action. In a word, tension in the mouth or throat muscles compels, by reason of direct muscular association, a hampering impairment of action in the muscles that approximate the vocal cords.

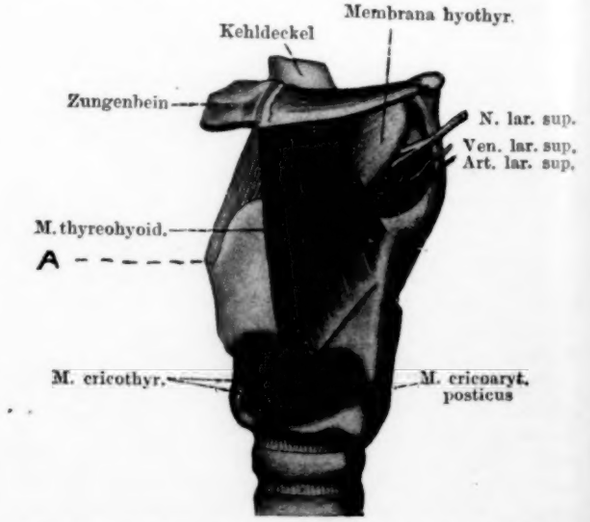

Fig. 5.—The larynx, showing certain muscles: *A*, point of anterior superior projection of thyroid cartilage, on which the finger is placed for observation of movements of the larynx in action. From Barth, Ernst: Einführung in die Physiologie, Pathologie und Hygiene der menschlichen Stimme (after Luschka).

Another consideration concerning tension is this: If the compression of the chest is too feeble, and consequently the air pressure against the vocal cords is inadequate, then, in order so far as possible to offset the inadequacy of air pressure at the vocal cords, over-

action is instinctively produced, involving the entire oro-extrinsic-intrinsic musculature. The result is unnatural, strained action of the intrinsic laryngeal muscles and consequent impaired vocal quality.

Another important cause of vocal tension is the failure to realize clearly that mouth molds should be produced in a spirit of passivity, relative to the spirit of activity and vigor required in chest action. Only when the mouth molds are produced lightly is it possible for the oro-extrinsic musculature to perform so perfectly as not to impair the action of the intrinsic muscles. The oral molds should be conceived of as, in fact, molds through which the vibrating air from the vocal cords is to pass, and the muscles that produce them should be held as lightly as possible, consistent with vocal requirements.

From the standpoint of psychology, the orolaryngeal muscles are as a whole set into vibration by the mental purpose to produce sound. The only muscles in this system over which our capability of control is direct are those of the lips, lower jaw and tongue. Education of the ear to appreciate quality and pitch in the voice is a primal necessity of improvement in vocal production. Lightness of guided action of the oral muscles and a careful, restrained control of the oro-extrinsic and of the intrinsic muscles, under guidance of a clear picture of the vocal sound that is desired, constitute the foundation for the action of this muscular system. As technical skill is developed, this visualization of the sound to be produced becomes more involved. This is owing to the fact that muscular sensations resulting from excellence of effort are added to the mental picture. The visualization of the sound possibilities of speech and voice is susceptible of much elaboration, and on the training of the mental ear to appreciate vocal sounds in respect to pitch and quality do the possibilities of artistic sound production largely depend.

Pitch is an inherent character of any vocal sound. The attainment of definite pitch is determined primarily by the manner of action of the oro-extrinsic musculature, which alters in a definite manner the relation of the thyroid to the cricoid cartilage, and probably, in consequence, the temporary length of the vocal cords. But the influence of this evidently important preparatory alteration in the relation of the thyroid to the cricoid cartilage on the manner of action of the intrinsic muscular system (especially of the complicated thyro-arytenoids) is not yet known in detail. But alteration of some sort in vocal cord approximation that affects changes in their vibration, influencing the pitch, is evidently thus brought about.

In the normal production of a vocal sound, the succession of acts required are: (1) visualization of the sound to be produced; (2) production of the mouth mold (lightly); (3) compression of the chest muscles, and (4) psychologic excitation of the orolaryngeal muscles to act, or, as the mind conceives of it, releasing of the sound. The vocal result will be excellent in proportion as (1) the chest action is adequate; (2) the psychologic visualization of the sound is true, and (3) the oro-extrinsic mechanism is controlled in a spirit of lightness or relative passivity.

In the past our judgment as to technical methods and success in vocal training has had no other basis than that brought about by the ear. One estimated the progress of training solely by the vocal result. Today, however, another important manner of judgment of the course of vocal training is available. It constitutes the one objective means, aside from the limited possibility of study of the vocal cords themselves by the laryngoscope, by which the correctness of action of the vocal cords may be understood. More exactly it tells whether the action of the extrinsic musculature is normal; from this we may infer whether the vocal cords are hampered in action or act freely, whether tension is present and whether the mechanism of pitch production is normal or disturbed in action. The value of the observation of the action of the movements of the thyroid cartilage by finger palpation cannot well be overstated. It has already proved of remarkable importance, and as the method becomes applied widely in the correction of vocal abnormalities and in vocal training, its value will be much augmented.

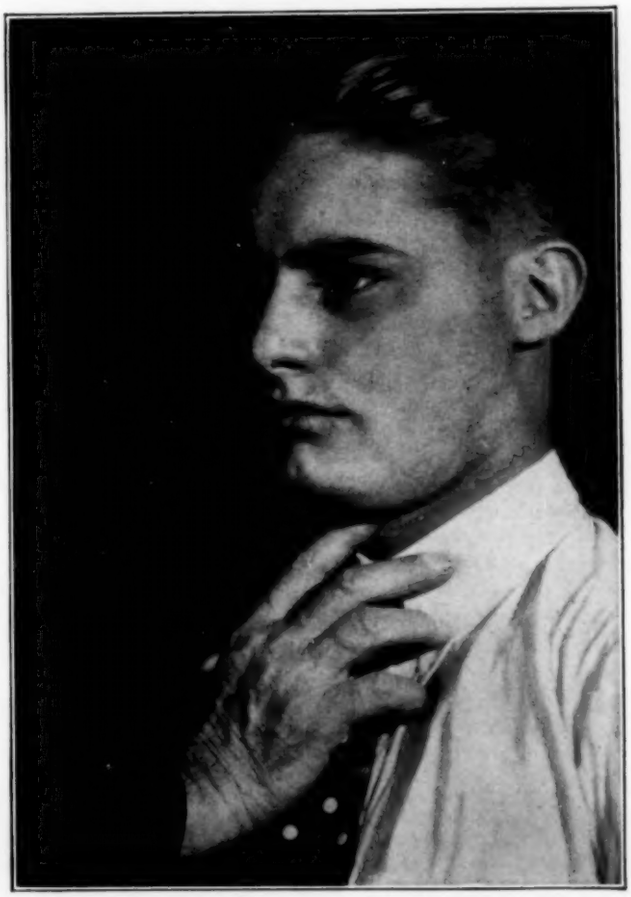

Fig. 6.—Manner of study of movements of the larynx with the finger on the thyroid cartilage.

SUMMARY AND CONCLUSIONS

1. The function of speech and voice production is dependent on the capability of the human mind to direct a complex anatomicophysiologic mechanism accurately and skilfully in the production of the movements required for talking. The mental action involved is not "instinct"; it is active, conscious, directive intelligence. The immaturity of the mentality of the child in his acquirement of speech must often be augmented by the adult teacher, who must acquire the knowledge that was denied to the child and so be able to assist successfully in carrying out any manner of aid to the function that may be called for. The success of his efforts will necessarily be proportionate to the trueness and extent of his knowledge of the psychophysiologic principles on which the speech musculature operates.

2. Three independently controllable systems of muscles are required for speech or voice production. Over the muscle of the chest the mind exercises direct conscious control, and our knowledge and skill in managing this musculature is susceptible of elaborate development. This control may be exercised independently of any other system of muscles.

3. The orolaryngeal system of muscles determines the manner in which the air pressure from the chest shall be utilized for sound production. Recent increase in our knowledge of the action of this system has altered sharply our former conception of its action and has clarified important vocal mysteries. The orolaryngeal muscular system acts in well defined segments of effort. Each segment is determined by the mind, which visualizes the sound and the consequent muscular effort required for its production. First, the mouth mold is (by tentatively conscious action) created; from the standpoint of this mold, under the continuing guidance of the mental picture of the sound to be produced, the oro-extrinsic musculature is set into operation; this act balances the thyroid cartilage on the cricoid in the manner required for that particular sound; finally, the intrinsic laryngeal musculature, still under guidance of the mental picture of the sound desired, is released into action that determines vocal cord position.

These complex acts constitute one segment of the production of sound; their combination produces words. All action of the oro-extrinsic musculature, for whatever sound purpose, is carried out in the same manner. Habit and skill serve to conceal the details of these acts.

The performance of the oro-extrinsic-intrinsic musculature is evidently under the control of psychologic mechanisms that serve to determine their action; actual performance is released by the conscious purpose to produce sound; these psychologic mechanisms are susceptible of elastic modification in accordance with the details of the mental picture as to pitch and quality of the sound desired.

4. Normal voice demands steady, adequate air pressure against the vocal cords, coupled with unhampered action of the intrinsic laryngeal musculature. If the action of the oro-extrinsic musculature is normal, the vocal cords may move with natural precision. Abnormal action of the oro-extrinsic musculature results chiefly from tension of the consciously controllable oral muscles, and from crude psychologic visualization of the sound to be produced.

5. Oralization or nasalization of a vocal sound is dependent on control of the muscles of the soft palate that results from the mental purpose to produce either type of sound.

6. Psychologically each muscular act demanded by the functions of voice and speech production is consciously controllable, either directly or indirectly, is susceptible of being produced with accuracy, and is susceptible of much intelligent elaboration.

7. Study of the movements of the thyroid cartilage during speech, or voice production, is a new and valuable means of gaining objective knowledge of the performance of the oro-extrinsic musculature and thus also of the action of the vocal cords.

8. Methods of training of the speech mechanism for the correction of disorders of speech, or of voice, or for improvement in the ideals of the voice, or of speech, may now be based on psychophysiologic knowledge definitely, more exact and complete than that of a few years past. Accurate methods of training can now be developed with greater certainty, and vagueness of purpose in this field of effort will be much less excusable than heretofore.

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ABSTRACT OF DISCUSSION

DR. AUSTIN A. HAYDEN, Chicago: This work represents a very distinct specialty which is an outgrowth of the specialty of otolaryngology. It is so highly specialized that we know little about it, and I dare say that not many of the men in this room could give an accurate definition of the words "quality," "pitch" and "intensity" such as Dr. Kenyon uses so frequently. To the general practitioner of otolaryngology this paper emphasizes two or three things that it is important for us to know and to practice. In the first place, cases presenting speech defects are very frequently referred to us for correction of such defects. He must be extremely careful not to expect operative measures to correct speech defects that are due to functional disorders, or at least to such disorders as Dr. Kenyon mentions. For that reason I think a most important point that we should observe in these cases is the fact that they should be referred to a man who will cultivate their speech and correct a great many of these disorders. At least, we should not try to correct them by operative proceduce.

BRONCHOMYCOSIS

REPORT OF EIGHTEEN CASES OF PRIMARY INFECTION IN THE LUNG *

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Since 1895 the medical literature of this country has contained reports of seventy cases of fungous infection. Cutaneous lesions are the most common, but systemic and pulmonary infections have also been reported. It is not possible to say how many of these patients had the primary infection in the lung. A study of the reports reveals that in twenty-seven of the cases there was an onset with cough and other symptoms of respiratory involvement. In only seventeen instances, however, was a fungus recovered from the sputum, and in nine this examination was negative. It is apparent, therefore, that primary fungous infection of the lung, without involvement of other structures, has not often been recognized. The diagnosis has not usually been made until the postmortem observations have revealed the true nature of the infection. The presence of a yeastlike fungus in sputum, particularly if there are no cutaneous lesions or signs of a systemic infection, has been and is usually considered a mouth or outside contaminant of no clinical significance.

During the last two years we have been able to isolate yeastlike or other fungi from the sputum of eighteen patients in whom the primary infection was in the lung, without involvement of other structures at the incipience of the disease. All but one of these patients are still alive; some are improving, and others are not doing well.

Our interest in this condition was aroused by the frequency with which yeastlike fungi in particular are found in sputum during the course of routine examinations for tubercle bacilli. After following up one such

* Read before the Section on Practice of Medicine at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

case in which we later isolated the same organism from postmortem specimens, we decided to practice routine examination for these organisms in specimens that showed yeastlike fungi in the stained smears. The cases that we report here are the result of this practice, and are illustrative of all the cases.

REPORT OF CASES

CASE 1.—H. S., a man, aged 40, a farmer and carpenter, a patient of Dr. A. A. Pleyte, Milwaukee, who entered Mount Washington Sanatorium, Aug. 30, 1926, was born in Clark County, Wis., in 1883. He had four brothers living and well; two brothers were dead (of tuberculosis); two sisters were living and well, and one sister was dead (of pneumonia). The history was otherwise negative. The patient states that he had lost from 15 to 20 pounds (from 7 to 9 Kg.) but did not have any pain in his chest or any hoarseness. He expectorated about 2 ounces of sputum in twenty-four hours, and complained of dyspnea on exertion and of chills and fever. The weight on entrance to the hospital was 101 pounds (46 Kg.).

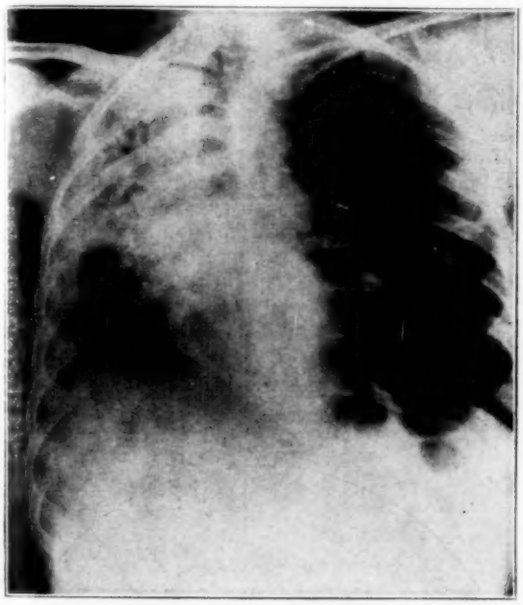

Fig. 1.—Appearance of chest in case 1.

He consulted Dr. Pleyte in September, 1923, and again in March, 1926, and in August, 1926.

In September, 1923, the temperature in the morning was 99.4 F.; the pulse, 96; the weight, 120 pounds (54.4 Kg.), and the height, 65 inches (165 cm.). The teeth showed evidences of pyorrhea; the tonsils were small; the heart was normal. Infection was present in the lower lobe of the right lung; resonance was impaired over the lower right lobe and moist râles were heard from the tenth to the sixth dorsal spine on the right side.

The patient was again examined in March, 1926. Since the last examination he had had pneumonia in 1923, influenza in 1924 and bronchitis in 1925. He complained of fatigue, loss of appetite, cough, expectoration and night sweats.

The temperature was 99.4 F.; the pulse, 122, and the weight, 116 pounds (52.6 Kg.). The patient appeared ill. Examination of the right lung revealed dulness from the tenth to the fifth dorsal spine and from the third to the fifth rib. There was bronchial breathing between the eighth and sixth dorsal spines and in the axilla between the fourth and sixth ribs. There was feeble breathing over the entire right lung. Medium and coarse moist râles were heard from the tenth to the fourth dorsal spines and from the fifth to the third ribs. The left lung had impaired resonance at the fourth dorsal spine and from the second rib up.

Examination in August, 1926, revealed essentially the same conditions. A tentative diagnosis of pulmonary tuberculosis of an active ulcerative type was made, although it was felt that this was an unusual case and should be investigated more carefully.

The physical examination made on the patient's admission to the Mount Washington Sanatorium showed conditions similar to those already reported.

X-ray films of the chest (fig. 1) made at this time were interpreted by Dr. A. A. Pleyte as follows:

There was peribronchial thickening in the left lung with extension to the axilla. The pleura in the region of the axilla appeared to have calcium deposits.

In the right lung the pleura was markedly thickened with underlying multiple cavitation from the fifth rib to the ninth dorsal spine. The presence of a partial hydrothorax below the fifth rib was not certain.

A diagnosis was not made, but some type of mycelium infection was considered probable.

The sputum in March, 1927, revealed a yeastlike fungus after repeated negative examinations for tubercle bacilli. This organism was grown in culture and was identified as belonging to the group of *Monilia*. It did not produce lesions in laboratory animals.

The diagnosis was bronchomoniliasis.

The patient when last heard from in January, 1928, was not coughing so much and was feeling much better.

CASE 2.—R. K., a man, aged 36, a laborer, a patient of Dr. James A. Evans, La Crosse, admitted, March 15, 1927, complained of coughing up blood. There was no family history of tuberculosis. The past history was of no interest in regard to the present illness.

About four months before admission the patient had had a "ring worm" on the right cheek, which entirely cleared up before the onset of pulmonary symptoms. Fourteen weeks before he had had an upper respiratory infection and had developed a cough. About a week later he had had a chill, following exposure; he had gradually become more short of breath for the next few days and had begun coughing bright red blood. He had continued to cough blood and had felt weak for three weeks, after which time he had consulted a physician, who took a roentgenogram and told him that he had tuberculosis in the upper right lobe. Sputum examination at that time was negative. He had continued to lose weight and had coughed blood until admitted to the sanatorium. During the day the cough was dry, but in the morning he would cough up a great deal of thick yellow sputum with traces of blood in it. During the past week, the temperature had never been above 99 F.

The patient was large and well developed but slightly pale. There was a marked axillary sweating. Chest examination showed expansion of good excursion and equal on the two sides. Posteriorly, the lungs were normal on careful auscultation and percussion. Anteriorly, over the upper right side of the chest in the second, third and fourth interspace, in an area extending from the sternum to the upper right axilla, there was heard a distinct transmission of the heart sounds. In the same area there was a slight suppression of the breath sounds, which were, however, of normal quality, and no râles were heard. There was a spot tender to pressure in the third interspace in the anterior axillary line.

The urine was negative for albumin and sugar.

The hemoglobin was 78 per cent; the red blood count, 3,950,000, and the white blood count 7,450, with 55 per cent polymorphonuclears and 45 per cent lymphocytes.

Five day sputum examinations were negative for tubercle bacilli. The Wassermann reaction was negative.

Fluoroscopy and stereoscopy of the chest showed a large shadow at the right hilum, which moved with cough, extending out toward the periphery, with a fairly definite border. The mass had a thickened base with a lateral extension from the mass to the chest border and an extension along the interlobar fissure between the upper and middle lobes.

There was a question of new growth and of abscess, with interlobar empyema.

Six days after admission he was discharged from the hospital, without having had any fever during his stay or lost any weight, and feeling well and strong. The diagnosis was questionable low grade abscess, probably due to spirochetal or fungus infection. He was given 0.6 Gm. of neoarsphenamine and was discharged. He reentered two months later, May 17, 1927. He had gained 7 pounds (3.2 Kg.) and was feeling well and doing light work. He still spit about a

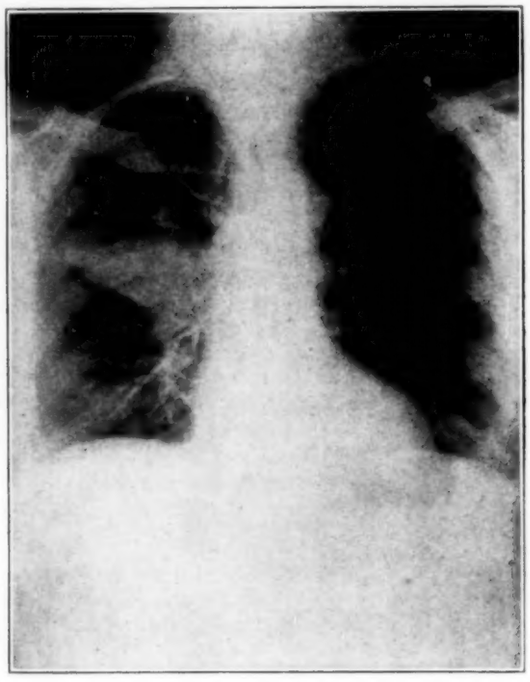

Fig. 2.—Appearance of chest in case 2.

tablespoonful of material in the morning, sometimes a little blood streaked, but not during the day. The sputum was never foul. He had been taking his temperature at home and had not had any fever for the past two months. There was still a little pain present in the right upper back, the right front and the region of the second interspace. Physical examination showed dulness over the right clavicle, and transmission of the heart sounds as before in the right second interspace toward the anterior axillary line. A stereoroentgenogram of the chest showed the shadow about as before, except that there was now a suggestion of honeycombing within the mass at the right hilum. The left hilum showed an increase of its markings and increased bronchial markings into the left lower lobe. The abscess was needled under the fluoroscope but no pus was obtained. The sputum was examined for the first time for spirilla or fungi and was found negative.

June 9, the coughing was less, there was no fever, and the patient was gaining weight. He was still too weak to work hard. Only a small amount of sputum was obtained in the morning and there had not been any blood lately. Physical examination did not show any increase in the physical signs. Yeast or fungi were not seen in a moist preparation from the sputum. The culture, however, had grown a yeastlike fungus. The organism was identified as Monilia. This organism did not produce lesions in laboratory animals.

The patient was given potassium iodide.

July 7, the patient was still gaining weight and there was no more hemoptysis. There was a slight amount of dry sputum in the morning and hacking during the day. The chest examination was still negative except for transmission of the heart sounds, as before. A stereoroentgenogram of the chest at this date showed collapse taking place at the right apex, the first six ribs being more oblique than on the left. The shadow at the right hilum was considerably smaller than two months before but was still honeycombed. The line of the right interlobar pleurisy, between the upper and middle lobes, was still present. The trachea, heart and mediastinum were drawn much more to the right than two months previously. The shadows at the left hilum were mostly absorbed, the markings here being practically normal.

There was a gradual absorption of the mass at the right hilum with fibrosis.

July 16, the sputum was again positive for *Monilia*. The chest plates are shown in figure 2.

Jan. 4, 1928, a letter from Dr. L. A. Miller of Colorado Springs reported that the patient had been failing and was much concerned about his condition. He coughed occasionally and expectorated slightly purulent sputum, from which blasto mycetes had been isolated. An occasional streak of blood was present in the sputum. There was a skin lesion about 2 by 3 cm. on the right side of the back, just above the iliac crest. He complained of pain in both sides of the chest across the hila, where a few râles were heard. Râles were also heard at the right apex and the left base, posteriorly. He had had a slightly irregular temperature and had lost a few pounds. The sputum was still negative for tuberculosis.

March 8, the sputum was again examined and a fungus was again isolated. Animal inoculations were negative. Dr. Evans wrote that under intravenous injections of gentian violet the patient seemed much improved and had gained 20 pounds (9 Kg.).

CASE 3.—O. W., a man, aged 45, was admitted to the hospital, Feb. 20, 1928, in a moribund condition. His local physician said that early in December he had had influenza. He had been ill about four weeks. He had coughed a great deal at this time but did not have blood-stained sputum. He had consulted several physicians in January. His cough continued to be severe, and in the latter part of January the sputum was bloody. He had complained of sore throat, which had grown worse, and his voice had become husky. The throat condition grew rapidly worse and the cough was almost continuous when he was admitted to the hospital. Two weeks prior to his coming to the hospital the sputum examination, made by one of us, revealed a yeastlike fungus.

The patient was in a state of extreme dyspnea. He had several ulcers on the lower lip, and on the upper lip below

Fig. 3.—Spores and mycelium from a malt agar culture of Monilia.

the nose there was a large ulcer covered with a crust from which a bloody serum was exuding. The anterior nares were filled with a bloody discharge. The gums were retracted and ulcerated. The posterior aspect of the soft palate showed a large ulcer with a yellowish border and a dark crusted center. There were clots of blood in the mouth. The submaxillary glands were enlarged.

The chest examination revealed dulness over the lower right chest posteriorly and some dulness anteriorly. The breath

sounds on the right side posteriorly were diminished. Tests for tactile and vocal fremitus were not made. The examination was otherwise negative.

The laboratory examinations were essentially negative except for the sputum, which revealed a yeastlike fungus in the fresh preparation which grew in cultures. This growth was obtained the first two weeks before the patient was admitted to the hospital and again on the day of admission. This organism was

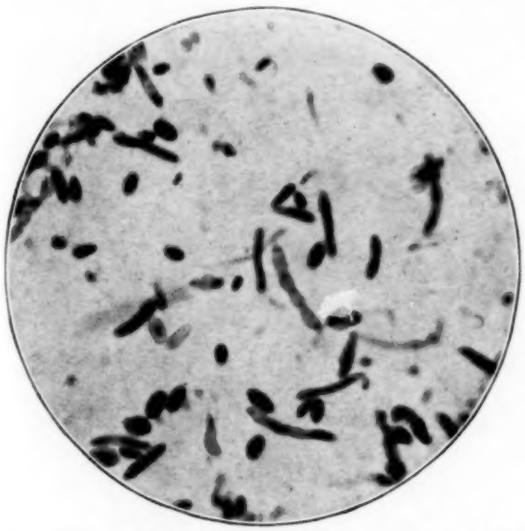

Fig. 4.—Endospores and short mycelium from a malt agar culture of Endomyces.

classified as *Monilia*. The animals inoculated died within two weeks and the organism was recovered from the lesions.

X-ray examination showed apparent changes in both extreme apexes and in the right base. The heart was widened to the left. The hilum structures were definitely increased.

The diagnosis was bronchomoniliasis.

The patient died, February 25, eighteen hours after admission to the hospital. No postmortem material could be obtained, not even a piece of tissue from the palate.

CASE 4.—R., a man, aged 45, a farmer, seen in the practice of Dr. H. E. Marsh of the Jackson Clinic, Madison, in November, 1926, complained of asthmatic attacks, which had been present since he had had influenza and pneumonia in February, 1925.

Physical examination showed medium and fine, moist râles, especially after coughing, in the lower lobes of both lungs. The patient was under observation for the next two months and developed a cough with moderate expectoration. This did not respond to treatment. The sputum examination was negative for tubercle bacilli but showed in moist preparation and in cultures a yeastlike fungus which was identified as *Monilia*. He was afebrile and had a leukocyte count of 10,000. X-ray plates of the chest showed a peribronchial infiltration. Examination was negative for tuberculosis.

The diagnosis was bronchomoniliasis.

The patient was treated with large doses of potassium iodide and was given x-ray treatments. He showed marked improvement.

X-ray plates, Feb. 2, 1927, showed only slight peribronchial infiltration and no evidence of tuberculosis.

August 26, the lungs were normal on physical examination and the x-ray plates were negative (fig. 5).

CASE 5.—E. S., aged 15, a school boy, admitted to the hospital, Jan. 16, 1928, had developed a dry nonproductive cough beginning about a year before, which had continued throughout the summer. However, he had felt well. In September, 1927, he had begun to have afternoon fever which rose to about 100 F. He did not raise any sputum at this time, although he still had a cough. December 12, he went to bed because of weakness. A diagnosis of bronchitis was made by the local physician.

Jan. 4, 1928, the patient returned to school. He felt exhausted, but there was still no sputum. January 13, he was seen in the outpatient department of the hospital, at which time a roentgenogram was taken of the chest. January 14, he developed a high fever and for the first time raised about a teaspoonful of blood-stained sputum. The patient had lost about 10 pounds (4.5 Kg.) in the last six months. The temperature, January 12, was 103 F.

The physical examination was essentially negative except for the chest. The breathing was rapid. There was a lag at the left base on inspiration. Tactile and vocal fremitus were absent over the left base. The breath sounds were diminished at the left base. Râles were heard over the left base posteriorly, and harsh and loud râles were heard over both apexes anteriorly. The percussion note was higher over the left apex. The respiration was 32 a minute.

The urine was normal except for the presence of acetone. The blood count showed hemoglobin, 60 per cent; red blood cells, 5,000,000, and white blood cells, 28,600, with 76 per cent neutrophils, 19 per cent lymphocytes and 5 per cent large mononuclears. The sputum was repeatedly negative for tubercle bacilli but was positive for a yeastlike fungus. This organism was found repeatedly in fresh preparation and in culture. Animal inoculation proved fatal and the organism was recovered from the lesions.

A flat roentgenogram of the chest, January 17, showed an increase in hilum structures, and some increase in the apical density on the right with diffuse soft changes. The left side of the chest showed a moderate increase in density in the lower portion with definite layering peripherally above the sulcus. Plates, February 6, showed that the density of the left chest had cleared, but that the extreme hilum lymph node increase on the right persisted.

The diagnosis was lobar pneumonia and pulmonary fungus infection, moniliasis.

The patient left the hospital with a normal temperature but with the physical signs and x-ray manifestations of some

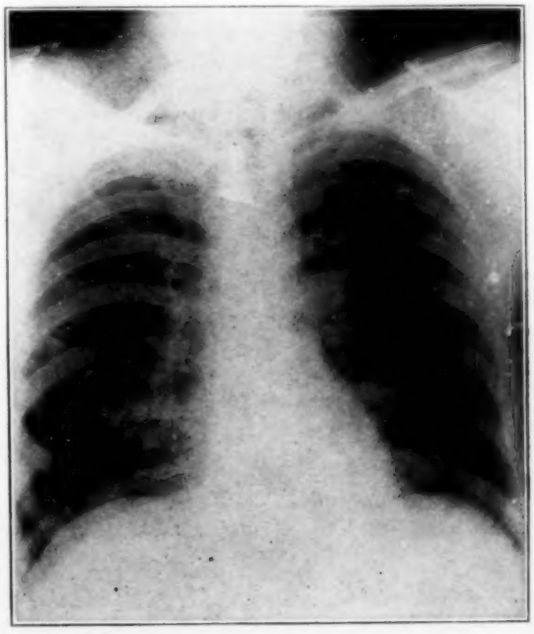

Fig. 5.—Appearance of chest in case 3.

inflammatory process in the chest. This was evidently a case of fungous infection of a year's duration in which an intercurrent lobar pneumonia developed.

COMMENT

In addition to these cases we have isolated yeastlike fungi from the sputum in forty others. In these, however, there was a definite clinical condition, as tuber-

culosis or carcinoma, other than the fungous infection, so that we cannot say what part the fungus plays in such cases. The possibilities of contamination cannot always be ruled out. We feel, however, from a consideration of these cases that the repeated finding of a fungus, yeastlike or otherwise, in sputum from a patient suffering from either a mild or a severe inflammatory process of the lung tissue is indicative of a fungous infection of the lung. If there are other causes, however, which might explain the condition, the possibility of the fungus being a secondary invader in tissue, the resistance of which has been lowered, must be considered.

In twelve of the eighteen cases in which the fungus alone was considered responsible for the condition, the organisms isolated produced lesions in animals. The organisms from the other six did not produce lesions.

For clinical purposes, it is convenient to classify organisms of this group on a morphologic basis as: (1) yeastlike, cryptococci, *Oidium, Monilia, Saccharomyces* and *Endomyces,* and (2) filamentous or bacillary forms, as the actinomyces group (figs. 1-5).

These fungi are easily found in moist preparations of sputum, and those which we have encountered have grown in from two to ten days on mediums ordinarily used in bacteriologic laboratories, plain agar, dextrose broth and Loeffler's blood serum.

Concerning animal inoculation, we feel that in cases in which the clinical evidence is clear and the sputum is repeatedly positive for a fungus, successful animal inoculation is not essential to the diagnosis.

Castellani [1] reports mild and severe types of infection. Our cases illustrate both. In the mild type

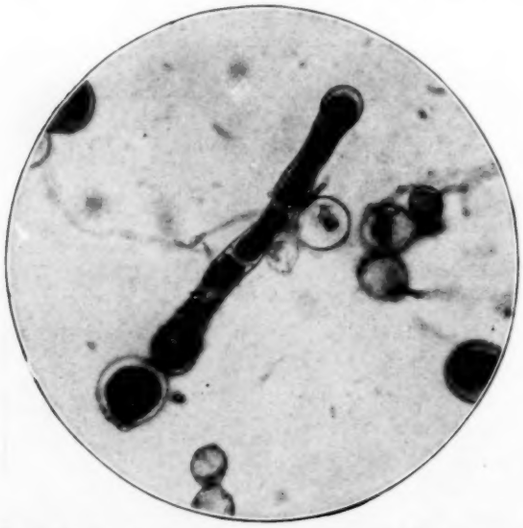

Fig. 6.—Spores and segmenting mycelium from a blood serum culture of oidium.

(case 3) the patients have very few symptoms and improve after several months of mild illness. The severe type is much like tuberculosis and in our experience is often mistaken for it. The striking thing about most of these cases is the disproportion between the amount of pathologic change and the symptoms. The patient has usually only a moderately severe cough, which is not characterized by a large amount of expectoration. The sputum is more mucopurulent than purulent and may be blood tinged. The fever, if any, is of a low type and the leukocyte count ranges from normal to seldom more than 10,000 cells per cubic millimeter. The histories show that many of these patients date their illness to some time following influenza or pneumonia and quite a few give a history of having had asthma for several years previous. This suggests the importance of lowered tissue resistance.

It has not been possible to follow the treatment of these patients very closely. They have all at one time or another received large doses of potassium iodide.

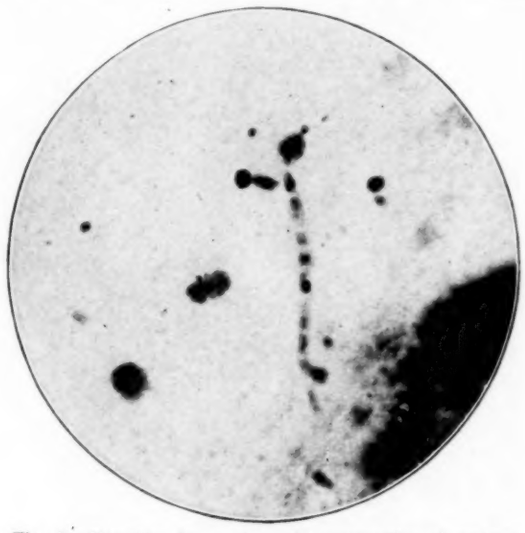

Fig. 7.—Yeastlike fungus in moist preparation of sputum.

The third patient received potassium iodide, copper sulphate and x-ray therapy at the same time. He is apparently well. He had, however, a mild type of infection. The second patient is much improved following intravenous injections of gentian violet. A few are now taking thymol as recommended by Meyer.

SUMMARY

Primary fungous infection of the lung is, in our opinion, more common than the literature indicates. The presence of yeastlike and other fungi in sputum is not, within itself, sufficient evidence on which to make a diagnosis of primary fungous infection. However, such a finding, in the absence of any other definite etiologic evidence, gives strong support to such a diagnosis. From such cases we have frequently recovered organisms which produced lesions in laboratory animals. Yeastlike fungi, in particular, appear to establish themselves in the lung tissue when the resistance is lowered, and may from that point become the predominating etiologic factor. In the series of cases here reported some of the organisms have produced lesions in laboratory animals and some have not. The organisms in every other respect appear to be identical.

State Laboratory of Hygiene—1 South Pinckney Street.

ABSTRACT OF DISCUSSION

DR. H. R. WAHL, Kansas City, Kan.: Mycotic lesions of the lungs undoubtedly occur more frequently than is commonly recognized. They should always be kept in mind in cases of chronic pulmonary diseases in which the diagnosis of tuberculosis is not positive. They are not always recognized easily, even when suspected. The usual custom of examining the sputum in obscure chronic lung infections for acid-fast organisms and ignoring all other organisms is undoubtedly responsible for the overlooking of many of those conditions. A note of all other organisms present should be made and even organ-

1. Castellani, Aldo: Fungi and Fungous Diseases, Arch. Dermat. & Syph. **16**: 383 (Oct.), 571 (Nov.), 714 (Dec.) 1927; **17**: 61 (Jan.), 194 (Feb.), 354 (March) 1928.

isms commonly regarded as nonpathogenic secondary invaders should be scrutinized carefully. Moreover, the examination of fresh unstained sputum often presents interesting information. Often the addition of 10 per cent potassium hydroxide reveals unexpected mycelial structures. Such obscure pulmonary infections as blastomycosis, moniliasis, actinomycosis and aspergillosis may show the characteristic organisms in the sputum, although, of course, their absence does not exclude such an infection. Some of these mycotic infections are difficult to distinguish from tuberculosis even at the autopsy. It is often only with the demonstration of the organism in microscopic study of the lesions that the true nature of the lesion becomes apparent. This is particularly true of blastomycosis. Actinomycosis can also easily be overlooked. The demonstration of the characteristic yellow granules or the filaments makes the diagnosis probable, but these structures are often absent, both in the sputum and in superficial lesions. Occasionally, the lesion of the lungs erodes through the chest wall and a biopsy of the granulation tissue on the edge of the ulcer reveals the organisms. This was illustrated recently in a colored man complaining of dyspnea and a "sore in the chest." A clinical diagnosis of empyema and a mediastinal mass was made. Microscopic examination of the edge of the ulcer showed some of the typical filaments of *Actinomyces*. An autopsy four weeks later showed a lesion containing those organisms in the wall of the hepatic flexure extending through the diaphragm and inflamed lung tissue to the ulcerated area on the surface of the chest. Another mycotic infection of the lungs not generally recognized till recently is moniliasis, repeatedly described by Castellani and others. It is due to a yeastlike organism—

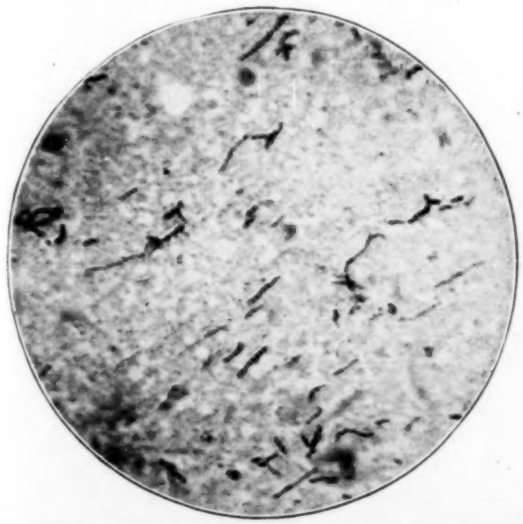

Fig. 8.—Branched and unbranched filaments of Actinomyces from pus of abdominal abscess in rabbit.

Monilia—which grows profusely on ordinary culture mediums. It causes a type of chronic bronchopneumonia. Aspergillus infections are rare.

DR. B. S. KLINE, Cleveland: I am particularly interested in blastomycosis because it may be confused with tuberculosis. Although we have never seen this condition in the lung, we have observed it in the skin. In the lung we have observed a condition that is frequently confused with tuberculosis, and therefore may be confused with blastomycosis, namely, a spirochetosis, first described by Rona in 1905. We have observed this protozoan infection of the lung in thirty-three cases at one hospital in the course of five years, although there are less than 150 cases recorded in the literature of the United States. If one sees a lung condition of obscure etiology without tubercle bacilli in the sputum, one should not content oneself with an examination for yeasts but should look also for spirochetes which, normally present in the mouths of all adults between the gums and the teeth, may gain a foothold on gingival or buccal surfaces and be aspirated into the lung, there to produce lesions that may be confused with tuberculosis.

DR. JAMES A. EVANS, La Crosse, Wis.: I want to report further progress in one of the patients that the authors reported on in their paper. This patient bore the diagnosis of tuberculosis for two months before the correct etiology was recognized. Treatment with potassium iodide caused apparent improvement for a while; then came a relapse and an apparent cure resulted after treatment with gentian violet, injected intravenously. This patient also had a skin lesion on the right cheek four months before any pulmonary symptoms developed. and during his relapse another skin lesion developed on the flank. The skin lesion which first developed on the right cheek had been diagnosed as ringworm.

DR. OTIS S. WARR, Memphis, Tenn.: Undoubtedly the condition which Drs. Stovall and Greeley have been discussing is of much more frequent occurrence than is generally recognized. During the past ten years we have been seeing systemic blastomycosis with increasing frequency. The first case was reported by Dr. Fontaine. During the past five years pulmonary mycoses have been occurring frequently. I am wondering whether this is because we are more alert in the recognition of the condition or because greater care is being used in the routine examination of sputum. We are quite certain that in the past many cases have been passed as pulmonary tuberculosis, frequently because the mere routine examination of sputum for tubercle bacilli was made without any cultural investigation for the mycoses. A case recently encountered illustrates the fact that the two diseases may occur simultaneuosly. A negro, aged 20, was admitted with a diagnosis of pleurisy with effusion. Physical signs indicated a massive pleural effusion, and on aspiration a few ounces of clear amber colored fluid was withdrawn. Dr. Michaelson examined it and reported finding tubercle bacilli. In two days the chest was aspirated again at a different point and to our astonishment we obtained pure pus instead of the amber colored fluid. This time Dr. Michaelson was able to recover *Blastomyces*. This case, like all our other cases, terminated fatally. We believe that the routine examination of sputum for tubercle bacilli, supplemented by a culture of the sputum for fungi, will disclose many more cases than have been recognized heretofore.

DR. W. D. STOVALL, Madison, Wis.: Finding a fungus in sputum does not of itself warrant a diagnosis of primary fungous infection. I have checked forty other cases from which I have been able to isolate a fungus, but other clinical entities would explain the symptoms, and for this reason we were unable to include them in our report. Great caution should be used in diagnosing fungous infection. It is hard sometimes to rule out ordinary fungous contamination, but this must be done before the diagnosis can be made. Successful animal inoculation is entirely unnecessary for the diagnosis of a primary fungous infection of the lung. To get positive takes in animals is notoriously difficult with these organisms. I have been successful in twelve out of the eighteen cases reported. I should like to call attention to the general clinical condition of these patients as differentiated from tuberculosis. In the first place, they do not appear to be so sick; their symptoms are milder; the temperature is lower, and expectoration is scanty and frequently blood tinged. The leukocyte count is seldom raised above 10,000 and usuallly runs around normal. I believe that a great many of these cases can be recognized from the routine examination of sputum for tubercle bacilli.

Bone Cysts.—Osteitis fibrosa cystica, or bone cysts, are in reality pseudocysts and not true cysts, as they are not lined by endothelium. They usually affect the long bones, chiefly the femur, humerus and tibia, occurring in the shafts and rarely involving the epiphyses. They are generally single, but cases of multiple cysts have been reported, especially in the bones of the hands and feet, and in the humerus, femur and pelvis. It is essentially an affection of young subjects in the growing stage. Most cases are found between the ages of 9 and 18. They are rare in the real young and, when found in older people, are believed to have originated while the patient was young and to have remained dormant. The two sexes are equally affected.—Dostal, R. J.: Osteitis Fibrosa Cystica or Bone Cysts, *Southwest Med.*, August, 1928.

PRIMARY NEOPLASMS OF THE HEART

REPORT OF AN UNUSUAL CASE *

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AND
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[EDITORIAL NOTE.—This paper, together with the paper of Dr. Barr, concludes the symposium on heart disease. In our last issue we published the papers of Drs. Spiro and Newman, and Dr. Smith.]

Primary rhabdomyosarcoma of the heart in an adult has not yet been reported in the literature. It is our purpose in this paper to report such a case and to discuss briefly primary tumors of the heart. The literature of this subject has been reviewed by Perlstein,[1] Goldstein,[2] Beck and Thatcher,[3] Nowicki [4] and Morris,[5] who gives comprehensive references to the literature of secondary growths in the heart.

Goldstein in his opening paragraph states that "tumors of the heart are uncommon; primary growths are rare; primary sarcoma of the heart is a very rare finding." According to Perlstein the heart is the least frequent site of primary neoplastic change, while Adami [6] remarks that "the heart above all organs is constantly in a state of great efficiency, well nourished, well innervated and functionally always active, so that it is less likely to take on aberrant growth." In the literature, more than 150 cases have been reported as primary tumors of the heart. Many of these are not regarded as primary by reviewers and some are thought not to be true neoplasms. Stengall and Fox [7] state that organized pedunculated thrombi in the heart have been mistaken frequently for tumors.

Fig. 1.—Appearance of chest: metastatic growths in right lung.

Goldstein says that Albers, in 1835, probably reported the first authentic case of primary tumor of the heart, a fibroma; and Perlstein believes that the first cardiac sarcoma was reported by Bondenheimer in 1865: a giant cell sarcoma the size of a hen's egg affecting the right auricle without metastasis.

Fibromas, rhabdomyomas and myxomas are the most frequent primary tumors of the heart. Sarcomas, angiomas and teratomas are less common. Primary tumors occur more often in the auricles than in the ventricles and more often on the left than on the right side. Meroz [8] collected reports of forty intracavitary tumors, thirty of which were in the left auricle, five in the left ventricle, one in the right auricle and four in the right ventricle. Many tumors occur in the parietal pericardium, the epicardium and the myocardium. Primary tumors of the cardiac valves also have been reported.

In 1918, Perlstein collected the reports of thirty cases of primary sarcoma of the heart and added one case of his own. To this series Beck and Thatcher added three cases from the literature and reported a case with a large spindle cell sarcoma of the left auricle. Nowicki reported four new cases of primary

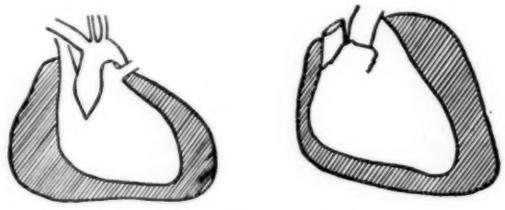

Fig. 2.—Anterior and lateral views of heart: shaded area, distribution of tumor.

tumors. Three of his cases were fibromatous or myxomatous in structure, but his other case was a spindle cell sarcoma which filled the left auricle. Matras [9] added a case in 1927, and recently Hill [10] reported a primary round cell sarcoma of the pericardium, bringing the total number of reported sarcomas of the heart to thirty-eight. The condition, then, is very rare, and, so far as we have been able to find, primary rhabdomyosarcoma in the adult heart has never been reported.

Histologically, thirty-one of the sarcomas that have been reported may be classified as follows: spindle cell, twelve; round cell, ten; giant cell, four; myxosarcoma, three; angiosarcoma, one, and lymphosarcoma, one. The ages have varied from 3 to 79 years, but more than half the cases have occurred between the ages of 18 and 50. Males are affected about twice as often as females.

Secondary tumors of the heart are more frequent than primary but are not common. These tumors usually reach the heart by direct extension from new growths in the adjacent tissues. Metastatic tumors are less frequent. Secondary sarcomas are found as often as secondary carcinomas. Any metastasizing tumor may produce a secondary lesion in the heart.

Cardiac tumors do not present a characteristic clinical picture. According to all the authors consulted, a correct clinical diagnosis of cardiac tumor has not been made during the life of the patient. In many of the reported cases the cardiac symptoms were negligible. Osler says that secondary tumors of the heart are usually unattended with symptoms, even when the disease is most extensive.

The symptoms present vary necessarily with the site and extent of the lesion. Sometimes no symptoms referable to the heart were described. The commonest observations were repeated hemorrhagic pericardial and pleural effusions. Edema was comparatively frequent;

* From the Lexington Clinic.

* Read before the Section on Practice of Medicine at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Perlstein, I.: Sarcoma of Heart, Am. J. M. Sc. **156:** 214 (Aug.) 1918.
2. Goldstein, H. I.: Heart Tumors, New York M. J. **115:** 97-101 (Jan. 18), 158-161 (Feb. 1) 1922.
3. Beck, C. S., and Thatcher, H. S.: Spindle Cell Sarcoma of Heart, Arch. Int. Med. **36:** 830-837 (Dec.) 1925.
4. Nowicki, W.: Beiträge zur pathologischen Anatomie der primären Herzgeschwülste, nebst einigen klinischen Bemerkungen (Pathologic Anatomy of Primary Heart Tumors), Virchows Arch. f. path. Anat. **259:** 502-520, 1926.
5. Morris, L. M.: Metastases to the Heart from Malignant Tumors, Am. Heart J. **3:** 219-229 (Dec.) 1927.
6. Adami: Principles of Pathology, 1909, p. 158.
7. Stengall and Fox, quoted by Goldstein (footnote 2).
8. Meroz, E.: Clinical Study of Three Cases of Primary Tumor of the Heart, Internat. Clin. **4:** 231, 1917.
9. Matras, A.: Primary Sarcoma of Heart, Ztschr. f. Kreislaufforsch. **19:** 233-246 (April) 1927.
10. Hill, Herbert: Primary Round Cell Sarcoma of Pericardium, Arch. Path. **5:** 626-629 (April) 1928.

occasionally it was confined to the face and neck or thorax, to the left arm or to the eyelids. At times, general edema was present. Heart block has been encountered in two cases; irregularities of the pulse and hemoptysis have occurred, while ascites, cyanosis and cardiac enlargement were frequent. Among the subjective symptoms, the commonest was dyspnea, while cough, weakness, fainting spells, pain in the chest, palpitation of the heart, vomiting, abdominal pain and headache have all been mentioned.

Some of the diagnoses made before death in the reported cases of cardiac neoplasms were myocarditis, pericarditis with effusion, intrathoracic or mediastinal tumor, tumor of the lung and pleurisy with effusion.

REPORT OF CASE

J. D., a man aged 62, a banker, seen in consultation, July 3, 1924, had had pain in the upper left portion of the chest for five or six weeks. He said that he "felt as if a muscle were being pulled in two." He had been able to work until one week before, when he noticed some swelling of the face and neck. During this time he had had a temperature ranging from normal to 101 F. every day, and he had been confined to bed. He had not had any other pain, disturbance of vision, headaches, nausea, or vomiting. The bowels were regular and there were no urinary symptoms. The striking feature on physical examination was the marked swelling of the neck and face with engorgement of all the superficial veins. He appeared quite anemic. Dyspnea was marked, but he was able to lie in bed without being propped up. There was slight edema of the skin of the chest and ankles; the temperature was 100.2 F. The pulse was regular and of good volume. The rate was 120 a minute. Noticeable pulsation was present in the brachial arteries; the heart beat was wavy, and the apex was in the sixth intercostal space almost to the anterior axillary line. No thrills were felt. The heart dulness was much enlarged both to the right and to the left, but the cardiohepatic angle was not obliterated. The area of dulness in the second intercostal space transversely was much increased; there was no accentuation of either second sound and no murmurs were heard. Except for a few moist râles in the left upper chest anteriorly, the lungs were normal. The abdomen and rectum were normal.

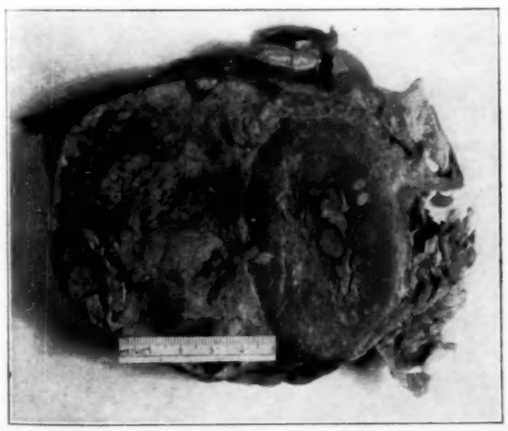

Fig. 3.—Section through left ventricle showing tumor tissue filling pericardial cavity and nodules in myocardium.

The urine on examination showed an acid reaction; a specific gravity of 1.020; a trace of albumin; no sugar, and a large excess of indican. The microscopic examination showed an occasional granular cast and a few pus cells.

The blood showed a hemoglobin content of 40 per cent, with 3,536,000 red cells and 12,500 leukocytes. The Wassermann reaction was negative.

The chemical estimations of the blood were as follows: urea nitrogen, 22 mg. per hundred cubic centimeters; uric acid, 2.5 mg.; creatinine, 3.33 mg., and sugar 90 mg.

A roentgenogram of the chest, taken July 14, showed (fig. 1) the heart apparently enormously enlarged, but the right border was unusually irregular and gave the impression that instead of fluid in the pericardial sac there was probably a tumor mass of some sort which displaced the heart to the left. The left border of the heart and and the aortic arch were clean cut. The right lung field appeared to be more compressed than the left and in it were several densities, one about 3 cm. in diameter near the hilum and another 1 cm. in diameter at the level of the fifth rib posteriorly

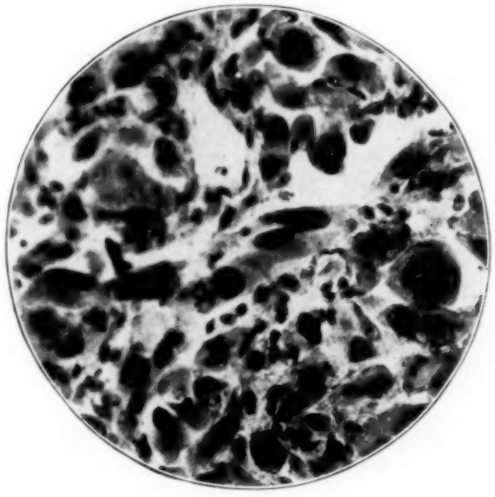

Fig. 4.—High power view showing marked polymorphism of cells from heart tumor.

—which were suggestive of small tumor masses. The diagnosis from the x-ray films was mediastinal tumor with smaller tumor masses in the right lung.

The highest temperatures on July 8 and 9 were 100.4 and 99.8 F., respectively, but from that time on the temperature was usually between 97 and 99. The pulse rate ranged from 105 to 120; the respiration rate was usually about 30. From July 4 to July 16 there was little change in the patient's condition. During the last three days of his life he was delirious and dyspneic but was able to lie flat in bed. Except when lying on the right side, he complained of great pain in the cardiac region. July 17, a needle was put into the pericardium but no fluid was obtained. Acting on the diagnosis of mediastinal growth, we gave deep x-ray therapy over the mediastinum, July 18. The patient died suddenly twenty-four hours later.

At necropsy an examination of the surface of the body did not reveal any unusual lesions, such as ulcers, tumors or pigmented moles. The superficial lymph glands were not enlarged. A large pear-shaped mass weighing 1,900 Gm. was found in the mediastinum (figs. 2 and 3). This mass was completely encapsulated and was loosely adherent to the sternum. The measurements were, laterally, 18 cm.; vertically, 19 cm., and anteroposteriorly, 13 cm. On section, a soft friable tissue was found filling the pericardial cavity and almost completely surrounding the heart. The tumor tissue was most abundant in front of and on each side of the heart, measuring from 4 to 7 cm. in thickness. Behind and below, the friable tissue measured from 1 to 3 cm. The large vessels at the base were also surrounded by this grayish tissue. The epicardium was almost completely destroyed. The tumor tissue invaded the heart muscle, but at no place did it extend very deeply. A number of metastatic nodules measuring from 2 to 10 mm. in diameter were found in the myocardium of the septum and left ventricle. Two papillary muscles in the left ventricle contained tumor nodules and in one the endocardium was destroyed; the tumor cells were separated from the blood stream by a thin fibrinous covering. Both lungs showed numerous metastatic nodules, none of which measured more than 10 mm. in diameter. The esophagus and bronchi were apparently normal. The liver and both kidneys presented a few small tumors. The gastro-intestinal tract, the pancreas

and the retroperitoneal glands were not unusual. The pelvic organs were apparently normal. Permission to examine the brain was not obtained

Sections from the tumor surrounding and invading the heart and from the nodules in the lungs, liver and kidneys all showed a polymorphous cell sarcoma with many long spindle cell forms, fibrillae and acidophilic cytoplasm (figs. 4 and 5). Faint longitudinal striations were apparent in some cells in the primary growth and in the metastatic nodules in the lung. Giant cells containing from one to four nuclei were prominent. The cells in the metastatic nodules did not show as great a variation in size and shape as in the primary lesion. No pigment could be demonstrated in any of the cells. Large areas of necrosis were present in the primary tumor, while some of the larger metastatic nodules had necrotic centers. The pathologic diagnosis was rhabdomyosarcoma, primary in the heart, with multiple metastases.

COMMENT

As we have stated before, in our study of the literature we have not found a case reported as primary rhabdomyosarcoma of the adult heart. Numerous rhabdomyomas have been reported,[11] most of which occurred in infancy or early childhood. We think that our case was a tumor primary in the heart, even though

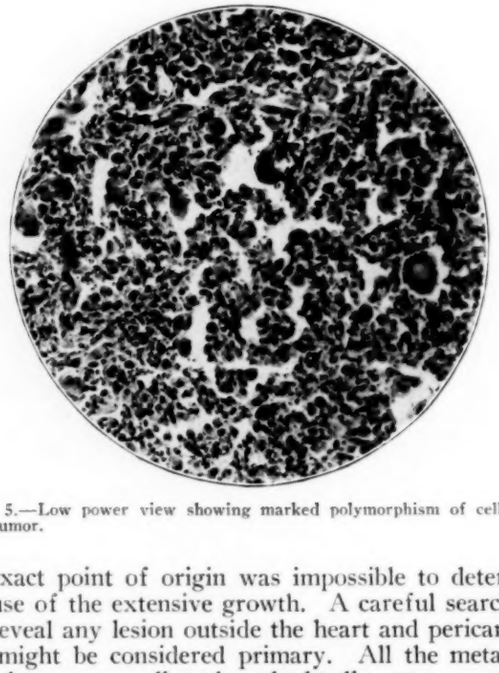

Fig. 5.—Low power view showing marked polymorphism of cells from heart tumor.

the exact point of origin was impossible to determine because of the extensive growth. A careful search did not reveal any lesion outside the heart and pericardium that might be considered primary. All the metastatic growths were small and undoubtedly were secondary to the cardiac tumor.

Our diagnosis was concurred in by Dr. James Ewing of New York, Dr. Frank B. Mallory of Boston and Dr. A. C. Broders of Rochester, Minn. Dr. Ewing writes: "I believe you have a very rare tumor, a rhabdomyosarcoma of the adult heart muscle. The long spindle cells with long striations, fibrillae, acidophil cytoplasm, can hardly have any other significance than origin from muscle cells." Dr. Mallory writes: "I am sure your tumor is a rhabdomyosarcoma but I have been unable to demonstrate striations." Later, on further study, he wrote: "It has been impossible to demonstrate positively either longitudinal or cross striations and yet I do not question in the slightest that the diagnosis is rhabdomyosarcoma." Dr. Broders also concurred in the diagnosis.

190 North Upper Street.

11. Uehlinger, Erwin: A Case of Diffuse Rhabdomyoma of the Heart, Virchows Arch. f. path. Anat. **258:** 719-730, 1925.

EXERCISE IN CARDIAC DISEASE *

DAVID P. BARR, M.D.
ST. LOUIS

The past decade has been marked by an unprecedented advance in our knowledge of the physiology of muscular exercise. From the work of Hill [1] and of Meyerhof [2] we now have a somewhat comprehensive understanding of the contraction of muscle. The effects of exertion on the circulation and the respiration have been studied by many observers. Since it is ordinarily necessary to manage cardiac patients in states of modified activity, the desirability of applying this newer knowledge to their clinical study is obvious. Although our understanding of the situation is still limited and incomplete, it may not be superfluous to review some of the scattered literature and to state some of the more important physiologic facts and principles on which we must base our advice concerning activity in patients with heart disease.

Muscular movement is accomplished by means of energy which results from the process of glycolysis, the chemical conversion of carbohydrate into lactic acid. This reaction is almost instantaneous and is not dependent on oxygen for its accomplishment. If oxygen is present in sufficient amounts, the lactic acid disappears as rapidly as it is formed. The amount of lactic acid that accumulates is therefore a measure of oxygen debt. If muscular movement is performed slowly and the oxygen supply is abundant there occurs no oxygen debt and there is no lactic acid accumulation.

All active persons, however, undertake frequently work of such violence that there is no possibility of supplying immediately a sufficient amount of oxygen. An oxygen debt and lactic acid accumulation are inevitable. Under these circumstances there occurs a profound acidosis which is due to the accumulation of both lactic and carbonic acid and which may equal in its extent the most extreme acidosis of diabetes or nephritis. The chemical changes that result have an effect on all vital processes but specifically on the respiration, which is increased out of all proportion to the changes in the circulation rate or the metabolic activity of the tissues.

In the period following excessive muscular work there is a gradual recovery. The volume of respiration is decreased; acid is removed, and the oxygen debt is paid. Conditions, however, may not return to normal for an hour or more.

The symptoms resulting from extreme exertion in a normal person are interesting and have a definite bearing on our conception of cardiac decompensation. Gordon, Levine and Wilmaers [3] have shown that there is no enlargement of the heart following a Marathon race. The runner may return with an accumulation of lactic acid and suffer from obvious fatigue. The heart, however, has not increased in size; the liver is not congested or enlarged; there is no sign of engorgement of the lungs. The symptoms do not resemble in any way those which are observed so frequently in congestive heart failure. The runner in a Marathon race may have incurred an oxygen debt and to that extent there has been insufficiency. But there is no evidence of venous congestion. There is nothing to indicate that the blood

* Read before the Section on Practice of Medicine at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

1. Hill, A. V.: Muscular Activity, Baltimore, 1926.
2. Meyerhof, Otto: Ergebn. d. Physiol. **22:** 328, 1923.
3. Gordon, Burgess; Levine, S. A., and Wilmaers, A.: Observations on a Group of Marathon Runners, Arch. Int. Med. **33:** 425 (April) 1924.

returning from the great veins to the heart has not been pumped promptly and efficiently to the periphery.

The question arises as to the causes that limit muscular work in normal persons. Much evidence which has accumulated in the last few years indicates that the respiration may be the limiting factor. The work of Himwich and Barr [4] suggests that in extended and violent exertion the circulation rate increases more rapidly and is more efficient than the pulmonary ventilation. Both Pearce [5] and Clark-Kennedy [6] have shown that with increasing work there is for each individual a point beyond which the respiration becomes inefficient. Probably the greatest factor in the limitation of exercise is the subjective distress in breathing, the intolerable dyspnea which the person experiences under these circumstances. This primary failure of respiration is without question conservative in its nature and prevents exertion which might, if continued, be beyond the powers of the circulation. It also explains why normal persons with a normal myocardium do not show the classic signs of cardiac decompensation. Sir Thomas Lewis [7] was perhaps the first to emphasize adequately the tremendous reserve power that exists in the normal heart. In his book on the "Soldier's Heart and the Effort Syndrome," he makes a postulate which subsequent investigation has tended to confirm. He says: "The burdens imposed by physiological acts upon the heart, however heavy these burdens may be, never exhaust the heart's reserve. The reserve of other bodily structures will fail before the heart is pushed to its limits of endurance." The evidence indicates that excessive exertion may be undertaken by a person and without injury to the heart so long as the heart muscle remains adequate and undiseased. The distress that he will feel when he attempts exercise beyond his powers will be due to local causes and to pulmonary insufficiency rather than to any serious strain on the heart itself.

Conditions in cardiac patients during exercise have been insufficiently studied. The reasons are obvious. In a group of persons with heart disease it is almost impossible to devise an exercise test which can be applied to their varying degrees of decompensation. There has also been in this work a tendency to study isolated phenomena such as the pulse rate, the blood pressure, the size of the heart by x-ray, the respiratory response or the circulation rate. There is, however, in the recent literature the extremely important work of Meakins and Long,[8] who studied the condition of oxygen debt in cardiac patients. This method of attacking the problem is perhaps the most comprehensive that we know as the oxygen debt represents in an individual the sum total of deficiency that may result from respiratory inadequacy, general circulatory insufficiency or defects in local circulation. The results of Meakins and Long show conclusively that in the cardiac patient there occurs during the performance of a given amount of work a larger oxygen debt, and that in the recovery period that follows a longer time must elapse before this debt can be paid. The larger oxygen debt of the patient with heart disease causes a greater stimulation to respiration. If there were no other factors, therefore, the respiratory limits of exertion would appear earlier and from smaller amounts of work. There are, however, further reasons for respiratory distress in the patient with heart disease. The beautiful work of Peabody [9] demonstrated long ago that the vital capacity of his lungs is diminished. Even when compensated he is seldom able under stress to increase his ventilation as much as a normal man. Peabody's work suggested that even in persons who have failed to exhibit obvious venous congestion the lungs are less efficient. The corollary of this observation is obvious. Such patients will experience extreme respiratory distress earlier than normal patients not only because of their greater oxygen debt but because of mechanical or nervous factors in the lungs themselves. Again, the respiratory limitation is conservative in its nature. It probably explains why many patients with weak heart muscle and low cardiac reserve are able to continue for a long time without obvious signs of decompensation.

The pathogenesis of the condition called congestive heart failure is not completely understood. It has nothing to do with the supply of oxygen or blood to peripheral tissues; it is not dependent solely on circulatory rate. It is usually if not always associated with an insufficient or diseased myocardium. It implies that the cardiac output fails to equal the intake of blood from the veins. The symptoms which it causes are always alarming. The pulmonary circulation is usually involved and dyspnea becomes a decisive limiting factor. Although the picture is generally considered equivalent to cardiac failure, it may occur under certain conditions in which the cardiac reserve has probably not been exceeded. In cases of tight mitral stenosis from rheumatic heart disease, the congestive symptoms may appear after trivial exertion. The respiratory distress is so great that the exercise must cease before the heart has been subjected to any prolonged strain.

Conditions are quite different in patients in whom such mechanical factors are absent. Congestive heart failure may occur in patients who suffer from aortic insufficiency or chronic hypertension, but it occurs later and has a more serious significance. In such patients, the reaction to exercise may be for a long time similar to that of normal persons. Just as in the normal man, the blood supply and circulation rate may not always be sufficient for the oxidative requirements of the body. Because of the valve lesion or changed pressure conditions, the insufficiency may appear from more trivial causes. A smaller amount of exercise may cause a greater oxygen debt, a more marked acidosis and a larger pulmonary ventilation. For a long period, however, there is no disproportion between the volume of blood entering the heart and that which is delivered to the periphery. In the absence of any mechanical factor, congestive symptoms appear late. Patients with this type of heart disease are called on to perform a greater amount of work before difficult breathing and subjective distress have warned them that they are attempting too much. The symptoms and signs of cardiac difficulty are less, but the strain on the heart is more severe. Decompensation or congestive symptoms in such a heart usually occur only after the cardiac reserve has been exceeded and there is actual heart failure.

It is a common clinical observation that patients with congestive cardiac failure in which mitral stenosis is the predisposing factor have in general a better prognosis than those whose congestive symptoms have

4. Himwich, H. E., and Barr, D. P.: J. Biol. Chem. **57**: 363 (Sept.) 1923.
5. Pearce, R. G.: The Cardiorespiratory Mechanism in Health and Disease, Arch. Int. Med. **27**: 139 (Feb.) 1921.
6. Clark-Kennedy, A. E., and Owen, T.: Quart. J. Med. **20**: 383, 1926.
7. Lewis, Thomas: The Soldier's Heart and the Effort Syndrome, New York, Paul B. Hoeber, 1918.
8. Meakins, J., and Long, C. H. N.: J. Clin. Investigation **4**: 273 (June) 1927.
9. Peabody, F. W., and Wentworth, J. A.: Clinical Studies of the Respiration, Arch. Int. Med. **20**: 443 (Sept.) 1917. Peabody, F. W.: Am. J. M. Sc. **155**: 100 (Jan.) 1918.

followed an aortic insufficiency or a chronic hypertension. A patient with mitral stenosis may be seen in repeated attacks of decompensation. Between attacks he may enjoy comparatively good health. On the other hand, a patient who develops congestive heart failure following syphilitic disease of the aortic valve may never regain his compensation.

SUMMARY

From this rapid survey of an immense field one can scarcely be justified in drawing conclusions. Several principles which have a bearing on our conception of exercise in cardiac disease may be emphasized.

1. In the study of muscular exertion two kinds of inadequacy must be considered separately. The first of these is a failure to supply the tissues with sufficient blood and oxygen. This may occur in any person at all, from the most highly trained athlete to the severely decompensated cardiac patient—but with different amounts of work. Whenever it occurs there is an oxygen debt, an accumulation of lactic acid and an exaggerated pulmonary response. Intrinsically it does not imply any abnormality, or cardiac weakness. The second form may be designated congestive heart failure and arises because the cardiac output does not keep pace with the inflow of blood to the heart. It is usually if not always dependent on myocardial insufficiency or disease. It occurs earlier and with less exertion when a mechanical factor, such as mitral stenosis, is also present.

2. In normal persons, exercise may be attempted in which sufficient supply of blood and oxygen to the tissues is impossible. Congestive cardiac failure, however, does not occur because respiratory factors limit the exercise before the maximum cardiac response has been attained. The patient with heart disease incurs an oxygen debt from more trivial causes. Dyspnea occurs earlier and is more severe. As in normal persons, the lungs may be the limiting factor and may protect the heart. The protection, however, may be insufficient and congestive heart failure may result.

3. In both normal persons and cardiac patients, dyspnea is the greatest safeguard against the possibility of heart strain and cardiac failure. Patients who have mechanical factors such as mitral stenosis have greater dyspnea and are more protected than those patients in whom this factor is absent. In patients with syphilitic disease of the aortic valve, with chronic hypertension and perhaps with myocardial defects, it may not be safe to accept dyspnea as the warning signal for the control of exercise. The observance of other symptoms or, indeed, an entirely arbitrary limitation of exertion, may be necessary to furnish sufficient protection.

Barnes Hospital.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SPIRO AND NEWMAN, DR. SMITH, DRS. BRADLEY AND MAXWELL, AND DR. BARR

DR. ROBERT S. BERGHOFF, Chicago: As stated by Drs. Bradley and Maxwell, tumors of the heart are relatively uncommon, particularly primary tumors, and yet certain varieties are encountered frequently enough to make them both important and interesting. Listed in their order of frequency, they should stand about as follows: myomas, fibromas, lipomas, granulomas, lymphangiomas, hemangiomas, lymphango-endotheliomas, gummas, secondary carcinomas, very occasionally sarcomas, and still less frequently rhabdomyosarcomas. Of this entire group, the myomas, or simple muscle tumors, make up the bulk. Rhabdomyomas (striped muscle tumors) and rhabdomyosarcomas are usually multiple. They may be as large as a walnut or considerably smaller, in which case they may be very numerous. They may be limited to the myocardium, but often invade the lumen of the heart. Rhabdomyomas are frequently associated with tuberous sclerosis of the brain. They probably originate from congenital tissue malformations, and are sometimes transformed into rhabdomyosarcomas. They are usually found in young persons. Secondary tumors of the heart are chiefly sarcomas, rarely carcinomas. As to differential diagnosis of tumors of the heart, the most important diseases and malformations to be ruled out are: (1) accessory tendinous threads, or Chiari's membrane, encountered occasionally, of which I recently had two specimens sent to me from the clinic of Dr. Bauer of Vienna; (2) intracardial thrombi; (3) gummas; (4) pericarditis; (5) chronic endocarditis, and (6) tuberculomas—the aftermath of tuberculous pericarditis, myocarditis or endocarditis. The clinical picture in all six of these conditions may be identical. The differential diagnosis must be arrived at by a most careful scrutiny, and the utilization of every possible diagnostic adjunct. From the first, Chiari's membrane, if the tumor involves the valve, a differentiation is impossible. Intracardial thrombi are usually an accompaniment of cardiac failure, which is a diagnostic help. Gummas can usually be ruled out by virtue of a positive Wassermann reaction or the presence of syphilis elsewhere. Pericarditis, if it presents its usual classic picture, is simple enough. Chronic endocarditis is only exceptionally confusing. Tuberculomas are always secondary to a primary focus elsewhere. All of this sounds simple enough, but the differential diagnosis of tumors of the heart is probably one of the most perplexing problems in medicine.

DR. SHELBY W. WISHART, Evansville, Ind.: Drs. Bradley and Maxwell are fortunate in having seen a primary rhabdomyosarcoma of the heart in an adult. In reviewing the literature, the authors were unable to find any record of a cardiac tumor correctly diagnosed antemortem. It is regrettable that the two cases which occurred during my service with the University of Michigan Hospital were never reported, particularly since both were correctly diagnosed before death by Dr. George R. Herrmann. The first was one of primary adenocarcinoma of the right bronchus involving both auricles and the upper part of both ventricles by direct extension. Two days before death, Dr. Herrmann insisted that the diagnosis of a mediastinal malignant growth primary in one of the bronchi and involving the heart by extension was justifiable. This diagnosis was confirmed post mortem. The second patient entered the university hospital in 1922. Two years before the onset of his present illness he had fallen and injured the right lower part of the back. Since birth, this area had contained a large deeply pigmented mole which, following the trauma, became infected. After cessation of the infection the area containing the mole was removed surgically. At the time of his entrance to the hospital, there were generalized cutaneous and subcutaneous nodules, varying from shotlike grains barely visible to areas 1 cm. in diameter. Most of these areas showed no pigmentation, while others just beneath the epidermis exhibited a deep purplish black reflex. Examination of the heart revealed a faint blowing aortic diastolic murmur over the aortic area to the right of the sternum and along the left border of the sternum in the secondary aortic area. Daily auscultation of this aortic diastolic murmur revealed rather frequent changes in its character. The diagnosis of recurrent melanosarcoma with multiple metastases was made, and Dr. Herrmann insisted that postmortem examination would show the presence of metastatic nodules on the aortic valve cusps. At the postmortem the following diagnosis was made by Dr. Warthin: "Recurrent melanosarcoma of the skin primary in pigmented mole of lower right lumbar region with multiple metastases. Aortic insufficiency due to sarcomatous infiltration of aortic valve."

DR. WILLIAM H. ROBEY, Boston: If muscular movement is performed slowly and the oxygen supply is abundant oxygen debt does not occur and there is no lactic acid accumulation. In the steady state of exercise which can be accomplished by an individual without oxygen debt there is normally a close correlation between the extent of the exertion, the circulation and the volume of the respiration. In the normal individual under violent exercise, the heart is about three times as active as

the body. The respiration is increased out of proportion to the circulation rate and metabolic activity of the tissues. If the normal individual is allowed to rest after the violent exercise, his oxygen debt is paid in times varying up to an hour, and if such exercise is not repeated too soon fatigue does not result. In the presence of endocardial disease in the young and the fibrosed heart of the elderly, the failure of respiration prevents exertion which might be continued beyond the powers of the circulation. In other words, this failure serves as a defense mechanism and is easily recognized by the patient and his physician. Roger Lee in examining thousands of Harvard freshmen found that athletics did no harm in students with normal hearts provided they were gradually trained. Eimer in a report this year found that track runners whose hearts were normal did not suffer from exhaustion and in almost every case the heart showed slight reduction in the transverse diameter. The duty of the physician is to determine in every patient whether or not he is dealing with a normal or diseased heart. Surely the presence of a murmur in a young person does not necessarily mean heart disease nor does the almost entire absence of abnormal physical signs in the elderly mean that the heart may not be seriously fibrosed. History and observation will give often more information than the stethoscope, and a normal electrocardiogram should not lull the physician into a sense of security. Years ago Sir James Mackenzie warned us not to take the murmur unaccompanied by other physical signs too seriously and thus limit the activities of the child. He said that many a child had had his career ruined by having limitations placed on his activities. I believe that in a child who can romp and play like any normal child the murmur can be disregarded.

DR. WALTER W. HAMBURGER, Chicago: Dr. Barr's paper is interesting outside of the content of the paper itself as showing the relation of laboratory studies to clinical medicine. In considering exercise in heart disease, the clinician first wishes to know whether the heart is normal as far as functional capacity is concerned, and then, if it is not normal, what the cardiac reserve is. In this connection, the classification of heart muscle function is important. The American Heart Association has classified as class A, or class 1, those patients with organic heart disease who have perfectly normal heart muscle function. Such patients can carry on exercise in a perfectly normal fashion. Then the classification goes to 2a, 2b, 3 and 4, including persons whose cardiac reserve is progressively limited, and whose functional capacity is progressively reduced. In prescribing exercise or work for the cardiac patient, one is interested in certain details of that exercise. The amount of exercise, the rate at which it is carried on, the intensity of the emotional state in connection with it, such questions as rest periods between work or between exercise, the nature of the exercise itself, i. e., whether it is walking, golf, horseback riding or swimming, are all of importance. The exact number of hours the patient should work is also to be considered. Many cardiac patients can carry on about eight hours' work if they have adequate rest periods between work periods. The work of Meakins and Long on oxygen debt indicates that it is the best measure of the cardiac patient's reserve that we have, so that if this method can be used in clinical medicine, it would be a distinct contribution. Dr. Barr emphasized also the primary failure of respiration in normal persons and in those with heart disease, and showed that this primary failure of respiration is conservative in nature. That is to say, if respiration fails earlier than circulation, it could be interpreted as a warning sign of future injury to the circulation. He emphasized the early appearance of respiratory failure in cardiac patients. They need a prolonged recovery period—a longer period of rest to pay the oxygen debt than the normal individual requires.

DR. J. P. ANDERSON, Cleveland: In selected cases quinidine is no more dangerous than digitalis. I have used it in four cases in which the patients were treated at their homes; however, I recommend the administration of quinidine only as a hospital procedure. One of the most important uses for quinidine is following thyroidectomy. In about 60 per cent of the cases in which fibrillation is secondary to hyperthyroidism, the patients are restored to a normal condition simply by the thyroidectomy. However, there are always a few who do not respond, in whom the fibrillation has been present for a long time, or in whom barely enough thyroid tissue has been removed to cause spontaneous reversion, and some of these patients will respond to quinidine—enough, perhaps, to make up an additional 10 per cent. I believe that preliminary digitalization is important and a frequent dosage of quinidine, continued day and night, seems to be essential in some cases. Dr. Spiro visited us recently and I showed him one patient with mitral stenosis with fibrillation. The pulse rate was 80 with no deficit. There was no failure and the patient's tolerance for exercise was good. His vital capacity was 4,200 cc. I had given him 240 grains of quinidine in ten days' time, with no effect. Dr. Spiro suggested that we might give it continuously day and night, and after the administration of 5 grains of quinidine every hour and a half for twenty-four hours the heart resumed its normal rhythm. There seems to be little use in trying quinidine unless one thinks that the patient can maintain a normal rhythm for a reasonable length of time. The points to consider are whether or not the patient is able to be up and about, whether or not he will be able to do light work without cardiac failure, whether or not he has a reasonable vital capacity, and last of all, as Drs. Spiro and Newman have shown, whether or not there is good cardiac excursion. Some other cases in which no fibrillation was present but in which the cardiac reserve was very poor were in the class in which the amplitude was very small. Drs. Spiro and Newman's method of demonstrating cardiac excursion corroborates fairly well our previous clinical impression, and it is an added, and perhaps one of the best, guides to the use of this drug.

DR. MOSES BARRON, Minneapolis: We hear a great deal about the dangers of administering quinidine in cases of auricular fibrillation. I should like to say a few words relative to the danger of not administering quinidine in this condition. Drs. Spiro and Newman pointed out that when the heart is decompensated and congestion and auricular fibrillation are present, there is a possibility of thrombosis in the heart. This thrombosis, however, is generally not in the ventricles but in the auricles for the obvious reason that when the auricles are fibrillating they are not contracting and are thus predisposed to thrombosis because of the local blood stasis during fibrillation. The type of action of the ventricles during fibrillation is of little consequence in the dangers of quinidine administration because the effect of quinidine is to start again auricular contractions which might break loose any recent thrombi present in the appendages of these organs. As I have stated, the relative stasis in the auricles from fibrillation predisposes to thrombus formation, and if fibrillation is allowed to continue when the patient might have his normal rhythm reestablished through quinidine, he is thereby endangered through possible embolism. Within the past seven or eight months we have seen five cases of embolic accidents with auricular fibrillation. In none of these cases had any quinidine been given. These cases emphasize the dangers of not giving quinidine in fibrillation when quinidine might reestablish the normal rhythm and thus prevent thrombus formation with consequent emboli. We have given quinidine in about twenty-five or thirty cases of fibrillation with excellent results, and have established the normal rhythm in more than 60 per cent. We have not had any accidents. We never give quinidine until compensation has been established. Our procedure is to order absolute rest in bed, and to give from 20 to 50 cc. of 40 per cent dextrose intravenously in severe decompensation once or twice daily for several days in addition to large doses of digitalis. When the patient is comfortable and compensation has been established we give quinidine, starting with small doses and increasing gradually to 50 or 60 grains a day, if necessary. If the large dosage does not establish the rhythm, we feel that it is of little use to continue further, because even if the rhythm is reestablished, too large a dosage will be required to maintain the normal rhythm.

DR. J. H. CANNON, Charleston, S. C.: About four years ago, we became interested in high carbohydrate diets in advanced heart failure. We used 2 ounces of Karo syrup with two slices of bread between meals, in addition to the usual salt free diet. This was about all of the carbohydrates that we could get these patients to take. In an effort to determine how they were handling the carbohydrates, we ran a series of about fifty

dextrose tolerance tests. We have not yet analyzed the result. My impression is that a majority showed that there was some delay in the rise of the curve with a rather prolonged and sustained height, indicating, apparently, that there was little interference with absorption but considerable difficulty in storage or utilization. We were not particularly impressed with our results; however, these were advanced cases, and we did not use theophylline-ethylenediamine in connection with the diet.

DR. DAVID P. BARR, St. Louis: Dr. Hamburger has emphasized the importance of the rate at which exercise is performed. Its applicability may be illustrated by the following case: A physician who had lived for many years on the third floor of an old fashioned apartment house developed serious signs of arteriosclerotic heart disease. His medical adviser insisted that as the first essential for improvement he must move from his apartment. The patient, who considered this his home, not only refused to move but discharged his physician. Severe decompensation developed and he finally was induced by friends to enter the hospital. Arguments failed to convince him that he could live comfortably elsewhere. After a short stay in the hospital he returned to his old room, but was instructed to count five slowly on each step of the three flights of stairs. This he has done conscientiously. He has continued to occupy the apartment to which he is so devoted and during a year and a half has not had further decompensation. Dr. Hamburger mentioned the importance of rest periods following exertion. In sports, the importance of the recovery period has long been recognized. The time between heats in races both of man and of horses is carefully estimated to allow a complete return to normal. Meakins and Long have shown that the recovery period after exertion is considerably prolonged in cardiac patients. Dr. Kountz of our medical department has been making some studies on the lactic acid content of the blood in patients who are badly decompensated. After the bed is made in the morning and the patient has been moved about by the nurse, the lactic acid content of the blood may be twice as great as it was when he awoke. But by evening with continued quiet and rest, the amount of lactic acid may have returned to its morning level. This not only illustrates the importance of Dr. Hamburger's remarks but may also emphasize the danger of frequent examinations and even of slight manipulation of the seriously decompensated cardiac patient.

DR. HARRY SPIRO, San Francisco: Dr. Anderson's observation on the effect of quinidine in cases of goiter is very important. I agree with him as to the time limit in auricular fibrillation. The longer the fibrillation is allowed to continue, the less likely one is to correct it. Still that should not dissuade one from trying to correct it. I disagree with Dr. Barron on some points. He states that the larger the dose of quinidine one has to give to correct a fibrillation, the larger the dose one has to give afterward to keep the heart action regular. That does not coincide with my experience at all. When the pacemaker of the heart once gets control again, as a rule it can keep control very easily, so the dosage of quinidine to maintain a normal rhythm does not depend on previous dosage. It is our habit to ration the amount of quinidine, giving from 10 to 12 grains a day for the rest of the patient's life, if necessary, in order to maintain normal rhythm. As to whether the auricle contains a thrombus more often than the ventricle, Dr. Barron is mainly in the right. In the vast majority of cases, the thrombosis is in the auricle, but we laid particular stress on that in our paper when we stated that when we examine a patient fluoroscopically and see the ventricle contract, we have a measure of the ventricular efficiency. The force, the speed or the power with which the blood leaves the auricle causes the apparently forceful expansion of the ventricle, and we stated that it was absolutely not our belief that it was the auricular action which causes the forceful expansion of the ventricle, but that something else was forcing the blood through the auricle, namely, venous pressure. If one sees, fluoroscopically, the ventricle distend with vigor, one has an idea of the force with which the blood leaves the auricle; so I believe that if one sees a vigorous relaxation and vigorous contraction of the ventricle, the chances of a loose thrombus being present in auricle or ventricle without clinical signs of emboli are very small.

IRRADIATION OF THE OVARIES AND HYPOPHYSIS IN DISTURBANCES OF MENSTRUATION*

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Few fields of treatment by irradiation are more beset with contradictory hypotheses and practices than is that of the attempted control of ovarian dysfunction through the so-called low-dosage irradiation of the ovaries, or through the indirect influence on the ovary of irradiation of other endocrine organs. Such irradiation has been particularly applicable in cases of menstrual irregularity in which, by exclusion of all other etiologic factors, an inherent disturbance of the ovaries may be assumed. This condition occurs in a relatively large group of cases which have heretofore offered great therapeutic difficulties. In the absence of a practicable clinical test for the determination of the level of ovarian activity comparable to the basal metabolic rate in the determination of thyroid activity, and from the inability to demonstrate by histologic studies a characteristic deviation from the normal structure in this group of cases, an exact syndrome cannot be established. From the similarity of symptoms in these conditions as compared with those common in the menopause and following partial oophorectomy or pelvic infections, we are inclined to believe that hypofunction prevails in all cases. The constant feature of this syndrome which we believe depends on the subactivity of the ovary is the essential lack of normal rhythm in menstruation.

CLASSIFICATION OF CASES

Cases may be classified on the basis of the type of menstrual irregularity into two groups: (1) Those in which the menstrual flow is irregular, infrequent and scanty, bordering on true amenorrhea or pronounced oligomenorrhea, and (2) those in which the flow is irregular, prolonged and profuse, so-called functional metrorrhagia. The two groups have as a common feature complete irregularity of menstruation, that is, the occurrence of short or long periods of menstruation interspaced by varying intervals. In most cases the irregularity has been apparent since the onset or within the first two years of the onset of menstruation; in others it follows parturition. Probably, as a direct result of ovarian insufficiency, sterility or one-child marriages are common in both groups. Ordinarily the general examination of these patients does not reveal marked pelvic abnormality; slight hypoplasia of the uterus, or slightly enlarged ovaries which appear to be cystic on palpation have been noted in a certain proportion of cases, and with abdominal exploration dense sclerotic ovarian capsules are occasionally encountered. Similar variations, however, have been found compatible with normal menstruation and reproduction in other persons.

Systemic complaints, which we regard as secondary to the basic ovarian disturbance, are common. Patients with a tendency to amenorrhea experience menstrual molimen manifested by backache, bearing-down or cramping pain in the pelvis, nausea or vomiting, headache and a chilly sensation. The molimen usually occurs

* From the Division of Medicine and the Section of Roentgen-Ray Therapy, respectively, the Mayo Clinic.
* Read before the Section on Radiology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

cyclically and may be severe enough to confine the patient to bed. With the occasional menses, dysmenorrhea is often pronounced. Vasomotor disturbances, such as hot flashes and profuse perspiration, may be present, and indicate, in our experience, a degree of ovarian change or atrophy less susceptible to treatment. That functional dysmenorrhea may likewise depend on a condition of ovarian hypofunction is suggested by the frequency of dysmenorrhea in association with scanty, infrequent periods, and the occasional success from the administration of ovarian extract. The obesity which follows a period of amenorrhea is extremely difficult to combat with the usual dietary regimen. Obesity and amenorrhea seem to form a vicious circle, for the more severe the amenorrhea, the more obese the patient and the more difficult the establishment of menstruation. Women with metrorrhagia suffer less often from dysmenorrhea or from painful molimen or vasomotor disturbances. They are inconvenienced and often incapacitated by the long continued flowing and the anemia which may follow. Patients with any marked disturbance of menstruation are prone to become introspective, and consequently a variety of functional complaints develop. Persistent vomiting or anorexia nervosa is a most distressing neurotic manifestation which is present in some cases.

The outstanding characteristics of the groups may be illustrated by a review of the patients seen in the last year at the Mayo Clinic.

Group 1. Sixty-nine new cases were diagnosed as primary ovarian amenorrhea, signifying that systemic disease which might be responsible for the condition was not present, or according to the history had not occurred. Neither could a local lesion be demonstrated in the uterus or adnexa.

The average age of the patients was 25 years. Thirty-nine were married; the average length of married life was six and six-tenths years. Only seventeen of the thirty-nine had children. Fourteen of these had one child, one had two children, one three, and one five. The average weight was 143 pounds (65 Kg.). One patient weighed more than 300 pounds (136 Kg.), seven weighed more than 200 pounds (90.7 Kg.) and twenty-five weighed more than 150 pounds (68 Kg.). Thirty were steadily gaining weight; the greatest gain had been 100 pounds (45.4 Kg.) in six years.

Group 2. Of the second group of cases, consisting of primary ovarian metrorrhagia, there were twenty-seven new cases in 1927. Again we have exercised extreme care in excluding from this classification any case in which a local lesion or general systemic disease might be regarded as the cause of the profuse flow. In all doubtful cases the patients were subjected to examination under anesthesia and uterine curettage was performed. The average age of these patients on registration was 23 years. Eleven patients were married; the average length of married life was five and six-tenths years. Only three had children; one had two children; the others each had one child. The average weight of the patients was 126 pounds (57 Kg.); four weighed more than 150 pounds (68 Kg.). In all cases the menstruation was completely without rhythm; long periods of bleeding often yielded only to the energetic administration of hemostyptics or they finally ceased spontaneously, occasionally to be followed by long periods of amenorrhea. In spite of practically continuous menses, the hemoglobin level was rarely found below normal; in only five in the group was the hemoglobin reading below 63 per cent. Ten patients complained of pain with menstruation; none experienced the associated symptoms described in the first group.

TREATMENT

From the lack of fundamental knowledge of the nature of the ovarian disturbances incident to such cases, treatment has been empiric and inexact. Commercial gland extracts have been widely employed with increased exercise and dietary regulation in the first group, and rest, hemostyptics and curettement in the second group. Operation on the ovary has had its vogue, including the incision of dense capsules, the puncturing of cysts and partial resection. The diversity of commercial extracts derived from the ovary is evidence of the confusion with regard to the functional rôle of the various structures in this organ. The indication for organotherapy and the results in ovarian dyscrasias has recently been ably reviewed by Graves.[1] In our experience, ovarian extract has been of the most help in cases of amenorrhea; more recently agomensin, a more concentrated extract, has been used. In metrorrhagia, sistomensin has been of value, and in severe cases small doses of radium have been applied within the uterus, and have at least controlled the flow temporarily. Often curettement alone is of temporary value. In the presence of low metabolic rates the indication for thyroid preparations seems clear, and its use alone has occasionally controlled menstruation satisfactorily. Hofstätter,[2] in 1911, reported good results with the use of pituitary extracts in oligomenorrhea and amenorrhea associated with hypoplasia of the uterus and hypodevelopment of the ovaries. This experience has been confirmed by Blair Bell and Fromme [2] and by the recent investigations of Zondek and Aschheim.[3] In judging the results of any treatment the spontaneous occurrence of short periods of normality or reversal to the opposite must be kept in mind.

Van de Velde,[4] in 1915, reported the relief of amenorrhea and oligomenorrhea following light irradiation over the ovaries. His experience was soon substantiated by Opitz, Fraenkel and Flatau.[4] Flatau presented fifty cases of amenorrhea in which ovarian hypofunction was considered the essential cause; thirty-six of the patients had been relieved by treatment, the onset of the first menstruation occurring usually from three to six weeks after irradiation and continuing regularly during the period of observation prior to his report. Four of the patients later became pregnant.

The roentgenologists mentioned used approximately one third of the so-called ovarian castration dose, which in turn represents approximately 70 per cent of a human erythema dose applied to the depth of the ovaries. Thaler [5] reduced this amount still further and more recent workers, Rubin,[6] Hirsch [7] and others have established a range of from one-twentieth to one-tenth skin erythema dose as effective in such cases. Thaler treated sixty-two patients with primary and secondary amenorrhea, forty of whom responded favorably and five of whom became pregnant within a short time. Of

1. Graves, W. P.: Ovarian Therapy, J. A. M. A. **89**: 1308-1311 (Oct. 15) 1927.
2. Quoted by Werner (footnote 16).
3. Zondek, B., and Aschheim, S.: Ei und Hormon, Klin. Wchnschr. **6**: 1321 (July) 1927.
4. Quoted by Thaler (footnote 5).
5. Thaler, Hans: Ueber Röntgenbehandlung der Amenorrhöe und anderer auf Unterfunktion der Ovarien beruhender Storungen, Zentralbl. f. Gynäk. **46**: 2034-2043 (June) 1922.
6. Rubin, I. C.: Sterility Associated with Habitual Amenorrhea Relieved by X-Ray Therapy, Am. J. Obst. & Gynec. **12**: 76-88 (July) 1926.
7. Hirsch, I. S.: X-Ray Treatment of Hypofunction of the Ovary with Special Reference to the Regulation of Menstrual Function, Surg. Gynec. Obst. **43**: 659-667 (Nov.) 1926.

thirty-two cases in which the periods of menstruation were too frequent and in which the same treatment was given, the periods were regulated favorably in eleven. Of eighteen cases in which the intervals were abnormally long and menstruation scanty, successful results were obtained in twelve.

The use of low-dosage irradiation in assumed ovarian hypofunction had its origin unquestionably in the temporarily widely accepted view of a stimulative effect produced by an appropriately estimated amount of irradiation on tissues and organs which, with more massive irradiation, showed degenerative or depressant effects. The consensus of opinion at present is that selective destruction of irradiation occurs which releases some check on the normal cyclic activity of the ovary. This divergence of opinion has naturally stimulated intensive study of the histologic alterations following the exposure of the ovary to graded doses of roentgen rays. The relative susceptibility of the organ to irradiation had been established in the early investigations of irradiation effects. Apparently complete follicular destruction had been found to result from the application of approximately 70 per cent of a unit skin dose to the ovaries. The corpora lutea and stroma appear more resistant, but the latter will show, with more intense irradiation, frequent stellate hemorrhages into its substance and swollen indistinct cell structure. Instances of returned menstrual and reproductive functions following a period of amenorrhea after roentgen-ray irradiation ranging from 35 to 50 per cent of a unit skin dose must be explained on the basis of varying resistance to irradiation either of follicles of different stages of development or of the individual follicles of all stages. In recent studies by Parkes,[8] a third possibility is advanced, on the basis of observation after a certain time interval on ovaries of white mice that had been irradiated intensively, of the apparent ingrowth of epithelioid cords of cells from the periphery of the ovary into the stroma, the cords exhibiting a tendency toward follicular arrangement. This is the only evidence as yet reported of an attempted regenerative process in the ovary after irradiation.

The objection to any irradiation of the ovaries which would permit of later fertilization of an injured ovum is obvious. The essential consideration for our present purpose, therefore, is to determine whether irradiation of approximately from 5 to 10 per cent of a skin erythema dose injures the ova, or, if they are injured, whether the injury is strictly limited to presumably maldeveloped or unhealthy follicles. Should destructive change occur, it is important to ascertain whether destruction is complete or whether partial recovery is possible. The evidence based on studies of effects of irradiation on the ovaries of small animals is open to the criticism that the conditions of irradiation and of dosage are rarely comparable to those pertaining to the therapeutic use of the roentgen ray. As a rule, the entire surface of the body or at least a relatively large portion of it is exposed to the rays, with correspondingly greater systemic and toxic effects. Parkes noted marked nutritional disturbances and even a state of hypothyroidism resulting from irradiation of rats. Schugt,[9] in a recent detailed study, found that with doses of 9 R units changes could not be detected in follicles of any stage during observation periods of four and a half months following irradiation. With 14 R units distinct changes were not noted in many cases, but in certain sections a portion of the primary follicles had apparently been injured. Following exposure to 21 R units, Schugt found a moderate number of intact follicles of all stages except the primary follicles, and even with 27 R units an occasional intact follicle persisted. Geller,[10] with 5 per cent of a skin erythema dose of irradiation, did not find evidence of histologic alteration in the ovary, whereas with 10 per cent of a unit skin dose he noted degenerative changes in many follicles of all stages. Wagner and Schoenhof[11] instituted studies of the human subject under strictly comparable conditions with those which obtain in the usual low dosage irradiation. Because practically no indication exists for operative procedures in conditions of hypo-ovarian function, little opportunity arises to obtain specimens from such ovaries; Wagner and Schoenhof selected young women for whom panhysterectomy was planned because of early carcinoma of the cervix and applied to one ovary from 5 to 10 per cent of a skin erythema dose, the other ovary being carefully protected. At operation, which followed within a fortnight, specimens of both ovaries were obtained. The histologic picture in the irradiated ovary in each instance was exactly comparable with that of the control ovary; alterations had not occurred that could be construed as evidence of a degenerative effect from irradiation.

The possibility of germ injury through irradiation has been exhaustively studied under varying conditions and with conflicting interpretation of results. Irradiation producing systemic alteration probably influences the vitality of the germ as do other chronic poisons. In the range of application comparable to the low dosage irradiation of the ovaries, that is, from 5 to 10 per cent of a unit skin dose, we believe with Nürnberger[12] that pertinent evidence indicating injury to the germ has not been advanced. On the other hand, there is sufficient clinical data showing favorable regulation of menstruation and subsequent full-term pregnancy with normal children in patients formerly sterile to justify its use in carefully selected cases.

It is not within the scope of this paper to review the numerous attempts to influence menstruation through irradiation of various endocrine organs and body tissues. Since Stephen's[13] studies of increased coagulability of the blood after irradiation of the spleen, this has been recognized as an efficient method of controlling abnormal bleeding, especially in youth and in conditions associated with adnexal inflammatory diseases, but relatively ineffective for abnormal bleeding at the climacteric.

Martius[14] has frequently combined splenic irradiation with irradiation of the area of the thyroid gland protecting the portion directly overlying the trachea. Hofbauer[15] was the first to attempt massive irradiation of the hypophyseal area for climacteric bleeding and hemorrhage due to uterine myomas. The results were not satisfactory, and Hofbauer himself refuted the early

8. Parkes, S. A.: On the Occurrence of the Estrus Cycle After X-Ray Sterilization: Part I. Irradiation of Mice at Three Weeks Old, Proc. Roy. Soc. London, series B **100:** 172-199, 1926.

9. Schugt, P.: Untersuchungen über die Wirkung abgedufter Dosen von Röntgenstrahlen verschiedener Wellenlange auf die Struktur und Funktion der Ovarien, Strahlentherapie **27:** 603-662, 1928.

10. Geller: Quoted by Wagner and Schoenhof (footnote 11).

11. Wagner, G. A., and Schoenhof, Clara: Experimentelle und histologische Untersuchungen zum Studium die Wirkungsmechanismus kleinster Roentgendosen auf die weiblichen Keimdrüsen des Menschen, Strahlentherapie **22:** 125-140, 1926.

12. Nürnberger, Ludwig: Ovarienbestrahlung und Nachkommenschaft, Strahlentherapie **24:** 125-148, 1926.

13. Stephen, Richard: Ueber die Stergerung der Zellfunktion durch Röntgenergie, Strahlentherapie **11:** 517-562, 1920.

14. Martius, Heinrich: Die sogennanten Reizestrahlung in der Gynäkologie, Strahlentherapie **21:** 242-259, 1925.

15. Quoted by Martius (footnote 14).

claims for this method. Irradiation of the hypophysis with low dosage has been reported successful in conditions of amenorrhea by Werner,[16] in the treatment of dysmenorrhea by Borak [15] and for sterility by Ligner.[15] Question of injury does not arise with light irradiation of the hypophysis, since the gland has been shown to be resistant to the massive irradiation used in the treatment of brain tumor.

On the basis of the foregoing data, we have felt justified in applying to the ovaries or hypophysis, in certain intractable cases of menstrual disturbances, a dosage of roentgen rays below the apparently safe limit of 5 per cent of a unit skin dose. Lack of adequate equipment for physical measurements prevents the expression of the dosage in terms of the accepted R unit. We employed for irradiation of the ovaries less than 10 per cent of a skin erythema dose at the surface of an abdominal field, 6 by 10 cm., using one or two fields depending on whether one or both ovaries were to be treated. The following factors were employed: voltage, 200 peak kilovolts; current, 5 milliamperes; filter, copper, 0.75 mm.; aluminum, 2 mm.; distance, 50 cm.; time, from eight to twelve minutes, depending on the cross-section area of the pelvis. From penetration studies for the irradiation used, the amount reaching the ovary was known to be less than 5 per cent of a skin erythema dose. In irradiation of the hypophysis, similar dosage was applied over two temporoparietal fields. In the institution of irradiation in this field, we regarded it as but one form of treatment, and have confined its use as a rule to cases of unusual severity. The results will therefore be of greater interest if associated with a survey of the results of other forms of treatment represented.

Group 1. All patients with amenorrhea were placed on a diet supplying adequate iron, vitamins and protein and having an appropriate calory content for the regulation of weight. The desired amount of outdoor exercise was prescribed. Organotherapy was instituted in fifty-nine of the sixty-eight cases. Results are reported from a group of thirty-six patients who replied to a recent questionnaire.

Eighteen of the thirty-six patients traced had been given extracts of the whole ovary. Eleven were much improved in general health and were slightly more regular in their periods; six were menstruating regularly; in one menstruation had been regular for six months. Five of the thirty-six patients were unusually obese and were accordingly given desiccated thyroid preparation in addition to the ovarian substance, although in all the basal metabolic rate was normal. All reported improvement and one has recently delivered a full-term normal child. Four patients whose metabolic rates were below normal, all of whom complained of ready fatigability, were given desiccated thyroid extract alone and there was improvement in strength and general sense of well being in each case. Three had not improved in regard to irregularity of the periods; in one menstruation had become regular.

Nine patients chosen for irradiation offered little expectation of success with the usual methods of treatment because the vascular disturbances were a prominent feature, because of great obesity, or because of the long duration of amenorrhea. Of the nine patients, seven received irradiation of the ovaries, one irradiation of the hypophysis and one irradiation of both the hypophysis and the ovaries. Five of the seven patients receiving ovarian exposures were typical of the group with amenorrhea associated with overweight, the intermenstrual intervals being more than six months and often more than two years. One patient had initial menstruation directly following the application of the rays; she has not replied to inquiries. The other four patients menstruated as a rule within a few days following treatment, and in all but one menstruation has continued with fair regularity. This patient after four regular menstrual periods again menstruated at long intervals. One patient who had amenorrhea for more than two years when treated, and who had been married seventeen years without pregnancy, is now in the eighth month of an apparently normal pregnancy. The sixth patient, one of the two who failed to respond to irradiation of the ovaries, was 37 years of age. In the seventh case, menses did not return but for a few months after treatment definite molimen, not previously experienced, occurred. The hot flashes were definitely relieved, the patient felt stronger and extreme mental depression has been relieved. The eighth patient, aged 31, had had amenorrhea for nine years. Menstruation of the three-day type with scanty flow and dysmenorrhea had started at the age of 15. She had been pregnant four times; abnormal symptoms had occurred in the pregnancies and puerperal bleeding had been profuse. Since the last delivery in 1919, the patient had been weak and languid. Menstruation had never been reestablished. Severe headaches occurred cyclically with other symptoms of molimen, especially a burning sensation in the stomach relieved by vomiting. The weight had been 150 pounds (68 Kg.) nine years before and was 192 pounds (87 Kg.) on admission. Agomensin and a reduction diet were prescribed. In two months the patient had lost 20 pounds (9 Kg.) but molimen was not relieved. A small daily dose of phenobarbital was prescribed to relieve the headaches. Irradiation was applied to the pituitary gland in August, 1927. Menses had not been reestablished, but the patient was definitely relieved of hot flashes and symptoms of molimen. The ninth patient presented the syndrome of amenorrhea in a milder degree, but with severe molimen. She was given first an irradiation of the hypophysis. Menstruation did not occur for two months and the ovaries were irradiated, which resulted in regular profuse menses at monthly intervals.

Four patients who were not considered among those with primary amenorrhea were given irradiation of the pituitary gland for the relief of hot flashes and nervousness. In the treatment of symptoms so subjective in interpretation, all suggestion of specific relief was carefully avoided. The first patient, aged 35, had suffered intensely since an operative menopause in 1920. Dizzy spells, hot flashes, severe headaches and backache had been present and were increasing in severity. The patient was addicted to the use of enormous doses of bromoseltzer and in many respects was incapable of carrying on normal activities. Irradiation of the pituitary gland in August, 1927, relieved the hot flashes and, to a large degree, the nervousness, the patient being conscious of a distinct change within twenty-four hours. The improvement continued during the short observation period (about ten days) before dismissal. The second patient came to the clinic primarily for treatment of amenorrhea and sterility. She had been married fourteen years. During the early years of marriage she had not been pregnant; then a series of four miscarriages had occurred. She had had amenorrhea for

16. Werner, P.: Ueber die Beeinflussbarkeit einiger gynäkologischer Krankheitsbilder durch Röntgenbestrahlung der Hypophysengegend, Zentralbl. f. Gynäk. **47**: 1260-1263 (Aug.) 1923.

one year. Molimen and hot flashes were very annoying. The discovery of a previously unsuspected syphilitic infection accounted in all probability for the condition. With the institution of specific antisyphilitic treatment, improvement in menstrual function and nervousness was anticipated. In this instance irradiation of the pituitary gland was applied as a test of its immediate effect in relieving vasomotor phenomena. Complete relief of the hot flashes was reported by the patient after twenty-four hours. We have used irradiation of the pituitary gland in two cases bordering on true menopausal psychosis without apparent benefit to the mental state in either case.

Group 2. In the series of twenty-seven cases of metrorrhagia, fifteen of which have remained under observation, curettage was performed in many instances to determine the presence or absence of local lesions. Curettage alone resulted in improvement in one known instance. In one case, abdominal exploration was resorted to following curettage; both failed to demonstrate a gross pathologic lesion. The menstruation while still irregular has been of shorter duration since the operation. In one case besides curettage bilateral cystic ovaries, of twice normal size, were partially resected. This patient is now having regular periods of six days' duration, but still has a slight amount of bloody discharge between periods. An intra-uterine application of radium followed curettage in one case with temporary improvement. Sistomensin and calcium lactate were used in four cases following curettage. The patients were instructed to continue the medication until the flow had ceased and to resume its use if any bleeding recurred. Three are improved, the hemorrhages being less profuse and prolonged. One patient has not been improved. One patient, after curettage, was given extract of whole ovary. She had two regular periods and then became pregnant but miscarried at five months. Only three of eight patients treated with gland extracts and hemostyptics have been traced. Menstruation has been established on a normal basis in one case. One patient was given thyroid preparation because of a low metabolic rate. She did not improve. In the remaining two cases, because of the severity of the bleeding, irradiation was used as an adjunct in the treatment and they are reported in the following group, together with several old cases in which additional treatment was needed.

In six cases of menorrhagia and metrorrhagia irradiation to the hypophysis alone or in combination with other methods of treatment was given. The first patient was a girl whose menstruation had been excessive in amount but regular in time interval since the onset at 13 years. Mammary gland extract had been ineffective in reducing the amount of flow. Dysmenorrhea had become so intense during the last two years as to require opiates for its relief. Nausea at the onset of menstruation prevented the administration of the antispasmodic remedies such as benzyl benzoate. Irradiation of the pituitary gland in June, 1927, was followed by definite reduction in the amount of menses and in the dysmenorrhea during the summer and autumn. A report in January, 1928, stated that there had been improvement in general health, continued regulation of the amount of flow and only slight dysmenorrhea. In the second instance, that of a patient, aged 42, menstruation had been profuse and irregular for several years, occurring now at intervals of two weeks. Irradiation of the pituitary gland was applied after a long period of unsuccessful organotherapy. The amount and frequency of menstruation were not affected during observation for two months; irradiation of the abdomen was then resorted to to induce the climacteric. In the third patient, aged 32, the chief complaint was hyperemesis associated with the menstrual periods; these had been irregular from their onset at the age of 13. For the last six years the flow had been profuse and often continuous for weeks. Occasional regulation had been secured with sistomensin but this had been ineffective during the period of profuse flow from September, 1927, to January, 1928. Since then there had been a constant sanguineous discharge. Irradiation of the hypophysis was applied in March, 1928, and within two weeks all bleeding had ceased. One normal menstrual period has occurred since then.

The fourth, fifth and sixth cases illustrate the most severe degree of menorrhagia and metrorrhagia in young persons. The patient's condition often reached a critical state as a result of the extreme loss of blood. In such emergencies several forms of treatment were often applied to insure control of hemorrhage and more rapid recovery. The fourth patient was a girl, aged 15. Continuous metrorrhagia had been present for two years. In March, 1926, radium had been applied within the uterus, which decreased the amount of flow and established some regularity of periods for about six months. On admission to the clinic in September, 1927, the patient was extremely weak. The hemoglobin level was 29 and 25 per cent on two determinations. Pelvic examination showed the uterus to be anterior in position and of normal size. The left ovary was palpable, but of normal size. The patient was given an immediate transfusion of 500 cc. of citrated blood. Irradiation of the hypophysis was applied the following day and within two days irradiation of the spleen was given. During this time the patient was placed on a high vitamin diet and given calcium lactate and sistomensin. Menstruation ceased within a week and the general health improved rapidly. Menstruation has been comparatively regular for the six months since treatment. The fifth patient was a girl, aged 17, whose menstruation had started at 14; periods of flow of four months or longer had been frequent. The hemorrhage had been sufficient to require vaginal packing on two occasions, and all forms of hemostyptics, many gland extracts and tonics had been used without effect. Examination of the pelvis under anesthesia failed to reveal any abnormality. The hemoglobin determination was 49 per cent. Curettage was performed in June, 1927, and one week later irradiation was applied to the spleen. There was entire cessation of menstrual flow until November, except for one normal period in July. In November metrorrhagia again appeared; calcium lactate and sistomensin were used for a time without relief. Irradiation of the spleen was again applied in December, 1927, with additional irradiation of the hypophysis. Again the abnormal flow ceased. Regular periods occurred in January, February and March and a slightly prolonged flow, moderate in amount, appeared in April. The sixth patient, a girl, aged 23, had menstruated once at the age of 17, but menstruation was not regularly established until the eighteenth year. Menorrhagia and metrorrhagia had begun about four years previously. Pelvic examination confirmed by laparotomy was negative. From the first admission in June, 1924, to August, 1927, treatment with mammary gland extract, corpus luteum, sistomensin, calcium lactate, two intra-uterine

radium applications with topical radium application to the spleen and repeated currettage had not been successful in affording more than temporary relief. Irradiation of the hypophysis was given in August, 1927. Menstrual irregularity continued, but to a less degree, for two months; then all menstruation ceased for three months. Symptoms recurred recently.

Two patients were treated for dysmenorrhea. The first patient, aged 30, had experienced marked prodromal symptoms of backache and pelvic discomfort for one week preceding menstruation. Severe pain, often requiring a narcotic for relief, started with the onset of menstruation and ordinarily confined the patient to bed for two days. Menstruation was always profuse and somewhat prolonged. Irradiation of the pituitary gland was given in September, 1927. In October the menstrual period was entirely without prodromal manifestations. A short period (about two hours) of moderate cramping pains occurred the first day. Complete relief of dysmenorrhea continued from November until March, with considerable reduction in the amount of menstrual flow. Return of dysmenorrhea in March was the occasion for repetition of treatment in April. The results of the second treatment have not as yet been ascertained. The second patient, aged 22, had had severe dysmenorrhea since 1922, with hyperemesis as a constant and prolonged symptom. Ovarian extract had failed to give relief and the patient was unable to tolerate oral medication immediately preceding menstruation. She had been obliged to give up her work because of frequent enforced absences. Irradiation of the pituitary gland was given in June, 1927, with marked relief of dysmenorrhea in the following menstrual period. Treatment was repeated in October, and for four months nausea and vomiting entirely disappeared. Menstruation was regular, of the four-day type, moderate in amount and without cramplike pains. The patient was sufficiently encouraged by this relief to undertake nurse's training in a large institution. Recurrent hyperemesis in January, 1928, threatened to incapacitate her again. A third treatment was accordingly given; since then the patient's health has been satisfactory with complete relief of dysmenorrhea.

ANIMAL EXPERIMENTS

From an experimental standpoint, we have attempted to investigate certain questions associated with low dosage irradiation of the ovary and hypophysis. This work is still in progress and we wish to give here only a brief review of the nature of the studies and results noted thus far. An attempt was made first to vary in some way the normal regularity of the estrual cycle of white rats by irradiation, checking by histologic studies any concomitant ovarian changes produced. Roentgen rays of varying penetrability and wave length were used, ranging from those produced with 7.5 cm. spark gap (peak voltage) without filter to 22.5 cm. spark gap with a 4 mm. aluminum filter. The surface dose varied from 5 to 50 per cent of a skin erythema dose for man. Irradiation was applied through small carefully selected areas. One animal only was treated at a time and was held by an assistant to insure maintenance of position and careful protection. Forty rats were irradiated, twenty-eight receiving a light dose of roentgen rays over the ovaries, of which fourteen showed a prompt variation in the estrual cycle. The effect most commonly noted was the omission of one or more estrual periods, immediately following treatment. Two rats showed complete irregularity for twenty-five and thirty days, respectively, following irradiation. A common tendency was prolongation of the stage of desquamation of cornified elements and irregular intervals of diestrum. In each instance the estrual irregularity following irradiation was temporary, the estrus returning to perfectly normal rhythm. Twelve female rats which had been irradiated were mated from seventy-five to one hundred days after irradiation. Seven became pregnant. In two others, necropsy revealed definite old pelvic infection with closure of the cornua, which explained the sterility. The sterility in the other three could not be explained. Two rats were mated 230 days after the roentgen-ray exposure. These and control rats of the same age failed to become pregnant. Of the seven rats that became pregnant, five delivered normal litters. One rat had two dead fetuses, another a litter of five normal young, which, however, she destroyed shortly after birth. The last two rats were remated; the first again delivered a dead fetus, was very ill for four days and died. Necropsy was not performed. The second rat had a normal litter with the second mating. All rats of the second generation were normal and when mated produced normal litters.

Twenty-six young rats from nine litters were subjected to varying doses of roentgen rays focused on the pituitary gland. The treatment was given when the rats were about 30 days old. The average period for the opening of the hymen of these rats was seventy-four days, as compared with seventy days in a control group of seventeen rats not subjected to roentgen rays. The onset of estrus was neither delayed nor hastened and the subsequent estrual cycles were normal. Histologic examination of the ovaries of the rats at varying periods following irradiation of both the ovaries and the hypophysis has not revealed constant or marked structural deviations. Healthy follicles of all sizes have been present with the occasional exception of primordial follicles. The ovary of the rat is a complex structure and there are constantly some structures exhibiting degenerative changes. Any inference as to the effects of irradiation producing degeneration in the ovary should therefore be carefully considered. It was noted, however, during a period of from two to eight days after irradiation of the ovaries that there was a relatively higher proportion of primordial follicles undergoing degenerative changes than when the ovaries were not irradiated.

SUMMARY

The continued study of a group of cases of primary oligomenorrhea and amenorrhea and of menorrhagia and metrorrhagia has confirmed the impression of an essential ovarian hypo-activity in both conditions.

The occurrence of spontaneous remissions and the variable results with all forms of treatment add difficulty to the evaluation of a new method.

Low dosage irradiation of the ovaries or hypophysis offers an additional therapeutic measure in intractable cases. The low dosage irradiation has given a comparatively high percentage of favorable results in view of the severity of symptoms in the cases in which it has been used, and regulation, when attained, has continued over a relatively long period.

In experimental studies which are still incomplete, an attempt was made to gage the amounts of roentgen rays for application to the ovaries of white rats which might be comparable to low dosage irradiation in the human being. Certain immediate variations in the

estrual cycle without disturbance of late regularity were obtained. In most instances fertility was not affected. The second and third generations of the irradiated rats were normal. It was not possible to demonstrate precocious sexual development of immature rats by irradiation of the hypophysis with varying amounts of roentgen rays.

ABSTRACT OF DISCUSSION

DR. WILLIAM ENGELBACH, St. Louis: Any irradiation of the ductless glands, if not properly applied, may either be stimulative, or hyperactivating, depressive, or hypo-activating. For this reason if the diagnosis is not correct, or if the correct dosage is not given just the opposite effect to that desired may result. I believe that many of the unfavorable results that have occurred were the result of two factors—wrong diagnosis and faulty dosage. With regard to treatment, I have had considerable experience with the use of the high voltage or the depressive or hypo-activating dose of roentgen ray to both ovaries and to the hypophysis. I have not had very much experience in using stimulating doses to either of these organs. I conclude from a large series of cases that irradiation given in high voltage dose is the best and quickest means of stopping the function of the ovaries and producing all those primary and secondary sex changes resulting from such a disturbance of activity of these organs. Years ago I followed the dictum that was accepted by every one at that time that as soon as a diagnosis of pituitary tumor was made, surgery was indicated. It was thought necessary at once to have the hypophyseal neoplasm removed in order to prevent serious neighboring pressure. After studying a considerable number of these cases for prolonged periods, I found that many were nonprogressive. They would remain stationary for a long time. I discovered to my chagrin that the recommendations I have given in earlier cases, namely, that an operation was not indicated in the nonprogressive type of neoplasm, were erroneous. Frequently surgery would do harm; the patient was much worse after the operation than before. Injury previous to operation was not relieved by the operation. Then I turned to irradiation, and took this stand: first, a nonprogressive neoplasm of the hypophysis was not surgical or roentgenologic so far as its treatment was concerned. As long as it remained stationary, as determined by serial examinations, if there was no sign of progress it did not need any kind of treatment. Secondly, if it was progressive, roentgen-ray treatment should be given as a trial. Since then I have not found it necessary to recommend surgery for this particular type of tumor. These are nearly all eosinophilic adenomas of the pituitary gland. Of course, we do have suprasellar and infrasellar tumors to which this does not apply. These types must be excluded. In treating pituitary epilepsy and pituitary headache, amenorrhea has been produced in a few instances, which must be taken into consideration. It is possible to do much injury if the diagnosis is not properly made and the treatment not properly estimated.

DR. THOMAS GROOVER, Washington, D. C.: A woman in her twenties was referred to me for treatment for what was presumed to be some ovarian dysfunction. She was examined by a competent gynecologist and the pelvic organs were thought to be entirely normal. There was nothing in a general examination that would indicate any other endocrine disturbance. Her chief complaint was metrorrhagia, though she did at one time have a period of amenorrhea. At the time she was referred to me she had been bleeding continuously for some months; the amount was not great but the flow was practically constant. I treated her by irradiation and aimed to keep my dosage well below the castration dose. In a very short time all bleeding stopped, and I predicted that later on menstruation would be reestablished, since the dose I had given her was small. But menstruation was not reestablished for some months. At the end of about a year she had appendicitis and was operated on by the same gynecologist who had referred her to me originally. Of course, he was interested in seeing the condition of the pelvic organs. After the operation he reported to me that the ovaries were simply fibrosed nodules and the uterus was not much larger than a thimble. I was very much chagrined, and, of course, the patient was disappointed. Incidentally, this gynecologist reported this case as illustrating the deleterious effects of irradiation. However, after a lapse of two or three years, this patient came to me and stated that for some few months menstruation had been reestablished and appeared to be perfectly normal. I sent her back to this same surgeon and gynecologist for further examination, and he said that so far as he was able to determine, the uterus was of normal size and that he could find absolutely nothing wrong with the pelvic organs. This patient has continued to menstruate quite normally ever since, and was subsequently married. She has not, however, had a pregnancy as yet, but the clinical picture to me was most interesting and at least illustrates how hazardous it is to predict what may occur in such cases.

DR. FRANCES A. FORD, Rochester, Minn.: Dr. Drips and I are presenting this study largely as a preliminary report, hoping that others will be interested in the same field of treatment. We recognize that possible injury from treatment may occur and that very careful control series must be maintained.

MYOFASCITIS FROM AN ORTHOPEDIC STANDPOINT *

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Myofascitis is a local manifestation of a toxic condition of the blood, evidenced by low grade inflammation or toxic involvement of the muscles and fasciae, the symptoms predominating at the fascial insertions of muscle to bone. Since the symptoms are so combined that both muscles and fasciae are affected, the compound term seems most descriptive. In a large percentage of instances it is practically synonymous with the following diagnoses as made by many eminent men in the profession: sacro-iliac strain or relaxation, lumbago, sciatica, and muscular rheumatism, which conditions are merely simulated, and empiric diagnoses made as a result of centering the attention on local symptoms. In 90 per cent of cases of myofascitis the toxic absorption is primarily from the colon; in the remaining 10 per cent, from teeth, tonsils, sinuses and gallbladder, often with secondary toxicity of the colon.

To distinguish between real and supposed traumatic lesions of the lumbar spine is in many instances one of the most difficult problems which confront the orthopedic surgeon. Between the real traumatic lesion, for which there are usually definite diagnostic criteria, and the case of neurosis malingering which, in industrial cases, may be designated as "compensitis" there is a large group of backaches and pains attributed by the patient to some past injury, usually slight, but in which neither clinical nor x-ray examination reveals any lesion of the spine or sacro-iliac joint. It is in this type of case that the patient often "shops around" from one orthopedist to another in an effort to discover the true origin of the symptoms. Continued failure to obtain relief may give rise to a certain degree of neurosis, yet the pains are not the fiction of the patient's overwrought imagination, aided by high-strung nerves, but are due to myofascitis.

The fascial insertions of muscle to bone become particularly hypersensitive. Pull or traction on these sensitive fascial insertions produces marked symptoms, out of all proportion to the degree of inflammation that is evident clinically, which often mislead the patient into believing he has sustained an actual traumatic lesion, if there is anything in his history to suggest it. This

* Read before the Section on Orthopedic Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 13, 1928.

is particularly true if the onset of symptoms is explosive, as in cases of so-called lumbago.

The local manifestations of subacute or chronic myofascitis are usually orthopedic in nature, and are therefore rarely seen by medical men except in very acute cases. Perhaps this partially accounts for the fact that the "lazy colon," as Campbell and Detwiller have so aptly described it, is so often overlooked, for the surgeon may be more prone than the internist would be to accept the patient's statement that he is not constipated. I have found that such assurance may be entirely contradicted by observations of the stool. As has already been indicated, symptoms of traumatic lesions of the lumbosacral spine are often simulated.

The recognition of this clinical entity has not been sudden but is the outgrowth of twenty-five years of practice during which I have been increasingly impressed by the large number of persistent cases of low-back pain, lumbago, sacro-iliac strain or relaxation, sciatica, strain of the lumbar muscles, or muscular rheumatism, and also certain cases of tennis elbow and of weak or flat foot referred to me under these captions for differential diagnosis and relief, in which treatment based only on these local diagnoses had proved singularly unsuccessful or, if relieved at the time, were associated with frequent relapses. Gradually the conviction grew that in a large number of such cases the diagnosis was empiric, the true pathologic condition being toxic absorption, usually from the colon, with local manifestations in the muscles and fasciae, as described.

The latter conviction was particularly stimulated because such local symptoms repeatedly varied within wide limits in accordance with the colonic function. Free evacuation of well formed stools would be followed by temporary diminution of local symptoms, and failure of satisfactory evacuation, with the stool soft and associated with flatulence, by exacerbation of local symptoms.

I therefore had the fecal matter examined thoroughly in all cases in which myofascitis was suspected, or which had failed to respond to treatment under the empiric diagnoses mentioned, and found that in 90 per cent of the cases the normal gram-negative flora were reduced in number, in several cases to as low as 30 per cent, whereas the proportion of gram-positive flora was markedly increased. Histamine was present in variable large amounts. Histamine in large quantities is regarded as a pathologic end-product and shows that intestinal disturbance has gone on to a point at which it may endanger any portion of the body from the toxic standpoint. Hashimoto of the Mayo Clinic has made a valuable study of the production of this chemical in the colon, and its effects on the systemic circulation.

Irrespective of the laboratory observations of Koessler and Hanks that histamine may be given to animals in large doses by mouth without any appreciable pharmacologic effect, I believe that large quantities of this amine in the stools of human beings are indicative of some pathologic condition, particularly as such observations have in my patients been coincident with an abnormal amount of mucus in the stool, and also with the clinical finding of constipation.

Longcope considers it highly probable that histamine may be absorbed from the intestine and cause disturbances not only of nitrogenous catabolism but also of renal function.

In many cases a considerable residue of cellulose or protein formic acid was noted, and the stool proved acid to all indicators. Instead of *B. coli* predominating as it does normally, and thus checking the growth of pathogenic bacteria, a very small percentage of this organism was present. From the bacteriologic standpoint, Hiss and Zinsser have shown that the function of *B.coli* in the intestine is not inconsiderable, if only because of its possible antagonism to certain putrefactive bacteria.

The slowing up of peristalsis may be a chronic condition due to sedentary occupations and lack of exercise, with a tendency to flatulence and distention; or it may be that trauma or accident has suddenly imposed inactivity on an active person used to laborious work, and this inactivity has led to intestinal stasis, although the trauma did not directly involve the part to which pain is referred.

It has long been known that absorption from an infected tooth may produce marked symptoms at various joints or fascial insertions or both. Indeed, symptoms have been known to subside within forty-eight hours after the removal of such teeth.

Yet, given a case of oral infection, whether teeth, tonsil or sinus, it does not follow that that is the sole location of toxic absorption, for the swallowing of the discharges from oral infection has in many instances caused infection of the lower bowel or colon, and this may have become the source of an extremely large percentage of toxic absorption by the time the tooth is pulled, the tonsil removed, or the sinus overcome. It must follow that in such cases the colon requires at least equal attention with the original primary source if the toxic absorption is to be really eradicated. At least stool examinations must be made to determine this.

In fifty consecutive unselected cases of myofascitis twenty-six patients had had tonsillectomy, cholecystectomy, appendectomy or the extraction of teeth, followed by temporary relief, but with subsequent return and chronicity of symptoms, owing to the fact that the toxic absorption from the colon had been overlooked.

If the possible areas for absorption in the body are considered, the colon certainly offers one of far greater extent—approximately 500 square inches. The fact that the surface is not smooth but is filled with diverticula and haustra, which by harboring inspissated feces court infection and toxic absorption, is also significant.

The peculiar settling of the toxins in the fascial insertions may be partly due to diminished circulation in a large number of terminal capillaries in these locations.

I have treated 164 cases of myofascitis to date and have referred more than 100 back to the attending physician for treatment after making the diagnosis, a total of approximately 275 cases which have been personally examined by me.

SYMPTOMS AND DIAGNOSIS

As has already been noted, the local manifestations of subacute or chronic myofascitis are usually orthopedic in nature and are rarely seen by medical men in this stage.

The main diagnostic sign of myofascitis is pain at bony insertions elicited by tension on the involved muscle or fascia, brought about in examination by limb posture. If it is a case of low back pain, in practically every case flexion of the hip, with extension of the knee, causes tension and resultant acute pain at the insertion of the fasciae and muscles into the bony structures in the region of the sacro-iliac joint. In like manner, flexion of the spine with hips and loins in extension produces the same sign. This I have called the myofascitis sign. The pain may radiate down the limb, and palpation locates it in the fasciae.

The inflammation or toxic involvement is usually of low grade. From an ordinary clinical examination little can be found in the way of edema or exudate as evidenced by increase of diameters, which is rarely noted. Pathologic examination, however, shows chronic inflammation. This corroborates our assumption as to the reason for the local orthopedic symptoms. The pathologist's report in a typical case reads as follows:

Gross.—Specimen measures 23 by 13 by 8 mm. It is firm and dark gray. The cut surface is fibrous with minute areas of hemorrhage near one edge.

Microscopic.—The various sections show a thickened epidermis with marked rete pegs. Cornification is slight. The subcutaneous tissues are fibrous, containing a few sweat glands here and there. There is a diffuse as well as perivascular infiltration of plasma cells. A few small round cells and polymorphonuclear leukocytes are likewise present.

Diagnosis.—Chronic inflammation.

Occasionally, induration of the affected muscles is clinically evident.

Permanent shortening may develop in the hamstrings and calf muscles in cases of long continued myofascitis of marked severity. In such cases the stretching and massage of the muscles, carried out at the same time the colonic treatments are being given, is usually effective. Long continued myofascitis, affecting the gastrocnemius and soleus muscle with coincident muscle spasm, and the foot in equinus position, may occasionally lead to such a degree of permanent shortening that operative lengthening of the achilles tendon becomes necessary. Such cases are, however, rare. Undoubtedly, the shortening of the achilles tendon is persistent and long continued cases of pes planus may be explained in this way.

By all means the most frequent location of pain is the lower back, where there are so many fascial insertions into bone. It may be vague or definite, and related to the spine, sacrum, or posterior wing of the ilium. Other myofascial insertions may be sensitive to touch or tension, as for example, the patella, the point at which the achilles tendon is attached to the os calcis and also at the epicondyles of the humerus. Difficulty in completely immobilizing the lumbar spine and preventing pull on the fascial insertions and muscles accounts for the very troublesome and persistent symptoms in this region.

In accident cases I have observed that patients complain of vague pains at sites of presumed injury, although actual injury is not found on close examination. Careful examination and history often reveal that the patient was for some time before the accident a victim of toxic absorption from the colon, and that the muscles and fasciae had been so affected by this toxicity that comparatively slight injury produced symptoms out of all proportion to the degree of trauma.

Evidence of a focus of infection or origin of toxic absorption, such as an infected tooth or tonsils, or colitis is usually found.

Constipation may be admitted or denied, but stool examination almost invariably will show an unhealthy toxic condition of the colon. In many cases there will be a history of tonsillectomy, cholecystectomy, appendectomy or the extraction of teeth, followed by temporary relief, but with subsequent return and chronicity of symptoms, the secondary toxicity of the colon because of metastatic involvement from the upper intestinal tract (including the oral cavity) having been overlooked and allowed to become chronic.

Histories, if taken carefully, frequently reveal other evidences of toxic absorption, such as remote or intermittent headaches, vague attacks of pain, a crick in the neck, previous nervous dyspepsia, evidence of duodenal ulcers, or treatment for lumbago on one or several occasions. These attacks may have been associated with or have followed some slight exertion, and the pains have shifted from one region to another, depending on what was the exciting factor.

SACRO-ILIAC STRAIN AND RELAXATION

At the present time a very large number of cases are diagnosed as "sacro-iliac strain or relaxation," and treatment of great variety is instituted for them. This includes strapping, belts and braces, massage, casts, and even sacro-iliac fusion. In the light of the observations recorded in this paper, I believe that in many instances the condition is really myofascitis of toxic origin.

Symphysiotomy, pubiotomy and fracture of the pelvic girdle all necessarily strain or separate the sacro-iliac joint to a far greater degree than could possibly result from the trifling injuries that are considered competent to produce sacro-iliac strain; yet, in my experience with a large number of such cases, symptoms referred to the sacro-iliac region have been notably lacking.

Although from palpation alone it is practically impossible, because of the anatomic position of the joint beneath the posterior wing of the ilium and the deep overlying structures, to tell whether the pain is from pressure on the joint itself or on the fascial insertions of muscles into the surrounding bony structures, a careful analysis of symptoms leads one to the latter conclusion, and the results of treatment based on this conclusion support it more definitely than any theoretical considerations.

TREATMENT

Treatment of myofascitis is directed primarily at the removal of the toxic absorption, particularly from the colon, and secondarily to the local manifestations. Such treatment has during the last five years yielded excellent results in a large series of cases which had been singularly resistant to a great variety of treatment elsewhere, directed primarily at the local manifestations.

It has markedly diminished the duration of mechanical treatment for the local orthopedic manifestations, and, in some cases seen early, eliminated mechanical treatment entirely.

If a focus of infection other than the colon has been demonstrated, such as apical abscesses or diseased tonsils, the treatment is apparent and need not be discussed in this paper. But for the remaining 90 per cent of cases in which the toxic absorption is from the colon, in the worst and most stubborn cases surgical eradication is certainly not to be advised lightly; and the treatment about to be described renders it, in a very large percentage of cases, unnecessary.

Colonic Treatment.—The colon is treated with medicated lavage, *B. coli* implantations are made, and a low-residue diet is prescribed which prevents carbohydrates from reaching the colon in undigested form, as their presence is known to favor toxic conditions. As Finker and von Wassermann believe that autointoxication is the result of bacterial activity on certain sugars, elimination of the offending sugar from the diet may be beneficial. Laboratory examination of the stool will reveal which sugar is the most active bacteriologically for a given patient, and this sugar should be eliminated from his diet.

To forestall any possibility of residue protein reaching the colon undigested, or bringing with it partially digested carbohydrates and liberating them in the colon, proteins and meats are taken only in moderate quantities. The importance of thorough mastication is impressed on the patient. The work of Kellogg at the Battle Creek Sanitarium has taught us much regarding the relation of diet and the action of the colon, and the influence of the colon on health.

To help restore the alkaline balance of the colonic tract, 15 grains (1 Gm.) each of magnesium oxide and calcium lactate are given in water after eating, three times daily. Magnesia magma powders are also given as necessary to relieve constipation.

Colonic lavage is given daily for about ten days. The patient is then ready for colon bacilli implantations. Some patients will do well without them, and the implantations are therefore not given as a routine; but it has been found that in most cases their action contributes definitely to the relief of symptoms. The cultures should be obtained fresh from the laboratory and used within four hours.

The implantations are given as follows: With a number 16 or 18 catheter, pushed in very gently as far as it will go, 120 cc., or 4 fluid ounces, of the culture combined with an equal amount of dextrin (heated by placing the bottle in hot water) are instilled through a small glass funnel attached to the catheter. Care should be taken that the buttocks are well elevated. Following this treatment, which is given daily for ten days, the patient is allowed to rest for fifteen or twenty minutes.

This treatment has a sound physiologic basis, because it restores the normal intestinal flora (*B. coli*) whereas oral administration of *B. acidophilus* is purely symptomatic and unphysiologic.

In intractable cases in which joint symptoms persist even after implantation of colon bacilli, the patients are sent to a laboratory for the complement fixation test as to intestinal or focal infection, and vaccines are made accordingly. These are usually cases in which the myofascitis is coincident with infectious arthritis.

Local Mechanical Treatment.—This treatment, in the form of adhesive strapping, belts, corsets and braces, is applied when indicated, but the treatment just outlined alleviates local symptoms to such an extent that the need for local treatment is surprisingly diminished and is entirely secondary.

In the most acute cases, in addition to the measures outlined, rest and recumbency in bed with the application of local heat are efficacious. This of course should be associated with stimulation of eliminative processes, and the giving of such drugs as neocinchophen and acetylsalicylic acid. When the case becomes subacute enough to be ambulatory, strapping of the back in precisely the same way as most clinicians would strap for sacro-iliac strain, namely, with a pad over the sacrum and tightly drawn adhesive straps placed three fourths of the way round the pelvis, is beneficial as a palliative measure until the toxicity is cleared up. This strapping relieves the pull on the myofascial insertions until the toxic inflammation is overcome by the colonic treatment and removal of other foci, as already outlined. When the toxic element has been brought under control, however, such strappings become unnecessary. The length of time for which they are required, if at all, varies within wide limits with the individual case.

Diet.—As has already been indicated, careful attention is given to the diet, eliminating whatever sugar is found by examination of the feces to be particularly active bacteriologically for the patient, and restricting proteins and meats to moderate quantities, with attention to thorough mastication.

Massage.—During the acute stage massage should not be carried out, as it may do more harm than good. In the chronic stage, however, massage is of the greatest service in that it undoubtedly overcomes myofascial adhesions, stimulates local circulation, and is beneficial from every standpoint.

In a few extreme cases in which the muscles and fasciae have become shortened, stretchings under an anesthetic have been found to be very helpful. These consist of putting the patient in the dorsal position and flexing the hip with the knee extended. This treatment should be followed by massage with stretching.

Fluids.—Every means of stimulating elimination should also be employed. Hence fluids should be taken in large quantities, and alkali water is very valuable. Daily hot baths with skin friction may be helpful.

Medication.—In acute persistent cases, neocinchophen in doses of 40 grains (2.6 Gm.) a day should be given for periods of four or five days with an intermission of an equal number of days. It has been found to be very beneficial in supplementing the eradication of focal absorption.

Results.—Striking has been the relief of symptoms when the colonic function has been returned to normal in cases that have been persistently resistant to mechanical treatment. Patients who have adhered to this regimen have been entirely relieved of symptoms that were in many instances chronic, and have discarded immobilization apparatus in cases in which this had previously been worn. The only recurrence has been in cases in which the colonic function was again allowed to become deranged, and these have usually again responded promptly to treatment.

It has been found most advantageous to have the entire treatment carried out under the direction of the orthopedic surgeon, as the colonic condition and the orthopedic manifestations are closely interrelated, and as the symptoms are orthopedic in nature.

I have found many cases of so-called sacro-iliac strain to be in reality myofascitis and now believe that the former entity rarely if ever exists, although ten years ago I frequently made such a diagnosis, as many still do.

ILLUSTRATIVE CASES

Case 1 is illustrative of the type of case in which, following prolonged oral infection, extreme toxicity of the colon develops, demanding equal attention with the other foci of infection, before the symptoms of myofascitis will subside.

CASE 1.—Mrs. J. A. P., aged 57, came to me, Sept. 9, 1927, on crutches, because of pain in the right knee which had begun gradually during 1926. In December, 1926, sudden jerking of the knee was followed by sharp pain. Rest and massage did not afford relief. The knee became swollen and painful, and heliotherapy was applied for six and one-half weeks, without relief. Two dead teeth were then extracted, and the tonsils were removed. Three days after the tonsillectomy the swelling and pain in the knee began to subside, but limited motion persisted and, at the time the patient came to me, any sudden motion caused sharp pain at the fascial insertions of the muscles to the patella.

Examination did not show any fluid in the knee, and the roentgenograms were negative. Close questioning brought out the fact that the patient had to take a laxative every day.

The stool was mushy in appearance. Its reaction was acid to all indicators. The dilution was 1:4. There was no bile

pigment. Histamine (iminazolylethylamine) was + + + + +. There were no bacteria producing sulphureted hydrogen, acetone or formaldehyde. Bacteria producing oxalic acid were present. Tests for hydrobilirubin were positive.

Microscopical examination of the food residue revealed absence of fibers, a large amount of cellulose, and absence of other forms.

Examination for blood, pus and crystals were negative. Blood pigment was + + + + +. There was a large amount of mucus.

Ova and parasites were absent. Bacteria were 80 per cent, gram-negative. Bacteria indole was +.

The examination showed a mushy stool, acid to all indicators. Histamine reactions were extra heavy; oxalic acid was present. The food residue consisted of cellulose. The contraindicated sugars were *d*-glucose and levulose.

Mucus in large amount with extra heavy blood coloring reactions indicated a very marked mucus colitis.

A diagnosis of myofascitis was made.

As the history showed that other foci of infection and toxicity had been eliminated, attention was directed to the colon. Massage was also given to break up the adhesions around the toxic muscles and fasciae. The response to this treatment was almost immediate, and after ten colonic treatments (as described under technic) and daily massage for one month, the symptoms were relieved, and the patient discarded her crutches. Two colonic treatments were given during October as a prophylactic measure. Since then the patient has been without complaint.

In this case, although the primary foci of infection had been removed, the metastatic toxicity of the colon had been overlooked, attention being centered on the local symptoms at the knee, and local treatment thereof. Recognition of the fact that the knee symptoms were secondary to chronic toxicity of the colon, and treatment for myofascitis led to prompt relief.

Case 2.—B. M. B., a man, aged 45, suffered pain most of the time in the right sacro-iliac region and down the right leg. The family physician had treated him for sciatic rheumatism, with baking and electrical treatments. The pain was worse at night but even in the daytime was so severe as to render walking most difficult. Fifteen years before, he had had lumbago. He had no headaches, fever or spasms.

In addition to the baking and electrical treatments he had received medication and had worn a corset brace. His condition progressed and seemed so serious that a well known orthopedic surgeon referred him to me for a sacro-iliac fusion.

When the patient came in he was apparently very ill, but examination convinced me that the condition was myofascitis and not a sacro-iliac lesion justifying operation.

The appearance of the stool was pasty. Its reaction was acid to all indicators. The dilution was 1:4. There was no bile pigment. Histamine (iminazolylethylamine) was + + + + + (extra heavy). There were no bacteria producing sulphureted hydrogen, oxalic acid, acetone or formaldehyde. Tests for hydrobilirubin were positive.

Microscopic examination of the food residue revealed numerous large meat fibers. There was no cellulose or other forms.

Examination for blood, pus and crystals was negative. Blood pigment was + +. There was a moderate amount of mucus.

Ova and parasites were absent. Bacteria were 75 per cent, gram-negative. Indole was negative.

Treatment for myofascitis was therefore instituted.

Following the second colonic irrigation, marked improvement was noted. One month later the patient made the statement that he felt well. Two months later there was slight tenderness over the external epicondyle of the right humerus and also on the left subdeltoid bursa. The medicated colonic lavage was therefore resumed and the diet continued. When last seen, in October, 1927, the patient had remained entirely relieved.

Although this case did not present symptoms directly referable to the gastro-intestinal tract, treatment directed to the colon as a focus of toxic absorption proved very effective and showed that operation would have been unwarranted.

Case 3 was a typical acute case:

Case 3.—H. A., a hard working man of 48 who had been an athlete at college, had gained weight soon after starting in business. His work necessitated considerable standing, and he had developed pronounced flatfoot, which was very painful. A week before I saw the patient, Oct. 12, 1923, he had been markedly overworked and was taken with a general pharyngitis. A culture taken from the posterior pharyngeal wall, which was slightly edematous, proved to be a pure culture of *Streptococcus hemolyticus*. This pharyngitis was immediately followed by sudden and severe pain in the left lumbar region, loin, and upper posterior part of the thigh. It was for relief of this pain that he consulted us.

For about five years the patient had had marked stomach trouble, evidenced by pain coming on about two hours after meals, and relieved by large doses of sodium bicarbonate. This was also associated with constipation and flatulent stools.

There was extreme sensitiveness over the posterior part of the thigh, which on casual examination would certainly have been considered due to pressure on the sciatic trunk. But more careful questioning and examination revealed that the pain was over the fascia of the posterior outer side of the thigh, radiating to the outer side below the knee and reaching almost to the ankle. With the patient in the dorsal position on the examining table with the knee extended, any attempt to flex the hip was associated with complaint of severe pain in the lumbar and posterior thigh region. With the patient on the right side an attempt to adduct the left leg was associated with pain in the outer posterior part of the upper thigh, apparently due to tension on the fascia lata.

In the past history, following excessive use of the hammer in driving heavy nails—work to which the patient was entirely unaccustomed—marked sensitiveness had developed over the external epicondyle of the right humerus which the patient localized as the exact location of the ordinary "tennis elbow." This had taken three months to subside.

A thorough laboratory examination, including roentgenograms of the teeth, examination of the tonsil by a nose and throat specialist, examination of the prostate, urinalysis and chemical examination of the blood failed to reveal anything abnormal.

Examination of the stool revealed histamine 4 (scale of 1 to 5). It was acid to all indicators. There were undigested meat fibers. Mucus was present in large amount with extra heavy blood-coloring reactions, indicating a very marked colitis. This accounted for the toxic absorption resulting in myofascitis.

The patient was given medicated colonic lavage daily for twelve days, and his diet regulated. The acute symptoms subsided. At the end of four weeks he was able to resume work but was instructed to continue the diet. At the end of two years he is still free from myofascitis. An acute case such as this, however, is not often seen at this stage by the orthopedic surgeon but usually comes to the medical practitioner.

Case 4.—Mrs. M. G., aged 32, seen, June 6, 1926, walked with a cane. She complained of pain in the left lumbar region, radiating to the left leg at times, and aggravated by turning in bed. About one year before, she had experienced pain in the left calf, radiating up the left leg. She had been treated elsewhere by baking, strapping, and extraction of teeth.

Dorsiflexion of the left foot produced marked pain in the calf, in the left popliteal space. The stool was mushy in appearance. Its reaction was acid to all indicators. The dilution was 1:4. There was no bile pigment. Histamine (iminazolylethylamine) was + + + +. Bacteria producing sulphureted hydrogen were present. There were no bacteria producing oxalic acid, acetone or formaldehyde. Tests for hydrobilirubin were positive.

Microscopic examination of the food residue revealed no fibers, cellulose or other forms.

Examination for blood, pus and crystals was negative. Blood pigment was + +. There was a large amount of mucus.

There were no ova or parasites. Bacteria were 85 per cent, gram-negative. Indole was + +.

The examination showed a mushy stool, acid to all indicators. Histamine and sulphureted hydrogen were present in large amounts.

The food residue consisted mainly of undigested meat. The contra-indicated sugars were *d*-glucose and levulose.

Mucus was present in large amount, indicating a marked mucuscolitis.

A diagnosis of myofascitis was made, and following the third treatment the patient stated that she "danced all night" without ill effect. After seven colonic irrigations and ten implantations, she was relieved of all symptoms. The sudden relief in this case is quite exceptional.

CASE 5.—C. M., a boy, aged 9 years, had had pain in both feet for three years. He walked on the toes of his left foot. The knees were also painful at times.

He had been fitted to plates and special shoes by a prominent orthopedic surgeon, and had faithfully carried out exercises prescribed by the same consultant, but without the slightest relief.

Examination, Nov. 9, 1927, revealed badly infected antrums, marked overweight, and a short achilles tendon.

The stool had the appearance of a pasty mass. The reaction was highly acid. The dilution was 1:5. There was no bile pigment. Histamine (iminazolylethylamine) was +++++. There were no bacteria producing sulphureted hydrogen, oxalic acid, acetone or formaldehyde.

Microscopic examination of the food residue did not reveal fibers or cellulose. Ninety per cent of the residue was undigested starch granules.

Examination for blood, pus and crystals was negative. Blood pigment was +++. There was a moderate amount of mucus.

Ova, parasites and indole were absent. Bacteria were 90 per cent, gram-negative. The contraindicated sugars were *d*-glucose and levulose.

This case illustrates the type of myofascitis in which the principal manifestation was in the feet in the form of pes planus. The gastrocnemius and soleus had been so seriously affected by prolonged toxicity that actual shortening had taken place and tenotomy had to be resorted to to lengthen the tendon.

This is also one of the most pronounced cases I have observed in which badly infected sinuses have caused a metastatic infection of the colon. I am certain that satisfactory relief would not have been obtained if the colonic treatments had not been carried on coincidentally with the evacuation of pus from the antrum and irrigation of the antrum. Operation was performed as soon as the toxicity began to respond to treatment. The end-result (June 1, 1928) is excellent.

The history of previous treatment in this case illustrates the fact that it is useless to treat the local orthopedic symptoms unless the primary toxic condition is eradicated.

30 East Fortieth Street.

ABSTRACT OF DISCUSSION

DR. WALTER G. STERN, Cleveland: Dr. Albee has clothed one of our old acquaintances—low back pain and arthritis—in the new, and to my mind more correct but rather plebian, garb of myofasciitis. Whatever we may think of low back pain as a symptom, it must be admitted that in the vast majority of noncontested nonlitigation or compensation cases, patients complaining of backache and the like are really telling the truth. In disputed compensation cases the reverse rather is true, but unless Dr. Albee and others give us a more exact means of diagnosing this myofascitis, the old lawyer's advice to his younger whist playing colleague, "When in doubt play the sacro-iliac joint," will surely be supplemented by the rule, "Lead through myofasciitis." I, for one, have never taken much stock in the idea that low back pains, lumbago, sciatica, sciatic scoliosis and the like were caused by slippings, subluxations, dislocations or disease of the sacro-iliac joints. For me this joint never had the self-satisfying attribute of a bureau drawer, the ability to slip in and out in response to unknown forces and thereby be the cause of all these complaints. The only genuine cases that I have ever seen proved by the roentgen ray were caused by real trauma, the diagnosis was self-evident from the roentgenograms and the patients never had any of the symptoms usually referred to it, not even the positive straight leg raising sign. I believe that Dr. Albee is giving us the right interpretation of the majority of our cases of backache, painful joints and the like but the absolute lack of diagnostic stigmas is the weakest point in this as in the other theories. As Dr. Albee has shown, the response in many of these cases to bowel cleansing is really astonishing, but this, too, is not really diagnostic. This method of treatment has been in vogue for thousands of years, as is seen by the annual pilgrimages made by these sufferers to mineral springs where magnesium, potassium and sodium sulphates are taken in small doses many times a day. It has been my custom to put these patients on a Pemberton diet, plus minute doses of the saline cathartics, every two hours—enough to give at least two soft movements of the bowel a day. At a recent meeting of the Cleveland Academy of Medicine, when this subject was up for discussion, the general practitioners were practically unanimous that 85 per cent of the joint pains and backaches seen in general practice were due to infectious or toxic absorption from the bowels.

DR. FRANK R. OBER, Boston: Myofascitis may be the prodromal stage, in many instances, of general arthritis, which may appear anywhere from five to six years later on. It is of interest not only to the orthopedic surgeon but to the medical man. The common method of treatment is to give a dose of salicylates, such as acetylsalicylic acid or one of the many other drugs, to relieve the pain. The patient is dismissed because he is well and the physician thinks that he has done a real job because he has relieved the patient's pain, but meanwhile the underlying condition is going on. As to the causes, Dr. Albee mentions constipation. Dr. Duncan speaks of hyperthyroidism. It is my experience that constipation may be the cause of what we call a spastic type of intestine in which diarrhea alternates with constipation. All who have seen hyperthyroidism know that in many cases there is looseness of the bowels. That is one of the classic symptoms of hyperthyroidism. On the other hand, there may be the same symptoms with hypothyroidism. It is important to investigate the patient's diet, the metabolic rate, and the weight and the character of the stool, especially the latter. When there is flatulence, there is usually tenderness along the sigmoid, some distention of the abdominal cavity, and acid stool with indigestion of some sort of food, as carbohydrates or protein. At any rate a complete examination of the stool is indicated, including a chemical analysis, and a study of gas and food indigestion. Diet itself plays an important part. Many of these patients will be relieved by being put on a low carbohydrate diet. The world is being overrun by people who are giving irrigations, on their own responsibility, some of them allowing as much as from 16 to 20 quarts of fluid to run into the large bowel. There is a question of giving low or high irrigations. A low enema will reach the cecum. It is a question of washing out the bowel. In cases of colitis it does not seem wise to give saline cathartics, as the irritability may be increased. In irrigating what is called the lazy intestine, massage, properly given, before the irrigation, will result in a much better evacuation of the bowel than straight irrigation itself. In some cases, however, the irrigation alone will work. I have found that in some of the irritable cases if one gives irrigations daily the patients may be a little upset, so it is often better to give irrigations every other day and gradually increase the treatment as the patients' condition warrants.

DR. H. H. MARKEL, San Francisco: I congratulate Dr. Albee on his paper. It agrees with my experience exactly. However, I feel there are very many times when it is difficult to separate these cases from mild occupational injuries, and the Industrial Accident Commission of California is always very favorable toward the patient, which makes it rather difficult. In Los Angeles, Dr. Raymond Taylor and Dr. Rea Smith last year reported a large number of cases which they have been treating along these lines by high colonic flushings, putting in the colonic tube by means of water pressure and ballooning out the bowel ahead of it so that they could put the tube clear into the cecum. After washing it out they implanted bacteria in there. *Bacillus acidophilus*, I believe.

Roentgenograms proved that the tube was in the cecum. I believe that this condition is very difficult to separate from radiculitis. The condition exists as a sort of periarticular disorder; that is, there is an inflammatory condition around the nerves and through the foramina which causes radiating pain, and which will simulate any sort of pain depending on the part of the body to which the affected nerve goes. We are usually able to differentiate this peculiar distribution of the pain. It has long been my custom to give such patients sodium sulphate. I have learned to do this empirically, giving a teaspoonful every other morning. It seems to help them wonderfully. It has the same effect that they get at the spas of Europe and also the springs, of which we have rather a good many in California. Oil enemas do the same thing. An oil enema may be retained over night, and it gives a very wonderful effect in these cases of early arthritis. I believe that this is a prodromal condition which, if carried on, will reach the condition of arthritis. I have noticed on some skeletons which I have been studying at times that the places along the spine showing the greatest strain will show a pulling out of the bone into osteophytes which are the result of strain, and I believe that it is the pull of those ligaments and fascial attachments which are pulled out that finally causes the terrible pain and the subsequent arthritic changes.

DR. P. B. MAGNUSON, Chicago: Of course, there is nothing new about toxemias from the intestine. There is nothing new about infections in the intestine any more than there is about infections anywhere else. The only thing new about it is that the orthopedic surgeon is just waking up to the fact that everything is not mechanical. We have infections in the intestines, toxemias in the intestine, and toxemias in the body itself, from the standpoint not only of toxins that form in the intestine and are absorbed but of toxins that are caused by poor metabolism for some reason with which we are not familiar. We do not know anything about the chemical reactions of the blood except a few incidental points. Neither do the medical men, but they treat many things on the theory that there is something wrong with the metabolism that can be controlled by food intake. Pemberton's hobby is carbohydrates. Somebody else's hobby is proteins. Somebody else's hobby is colonic flushings, and somebody else's is cathartics. In other words they change in some way the metabolism or the organism that is causing some toxin which is being absorbed. We all know that the back is subject to the same ills that other tissues of the same kind are subject to. When we look at the back we must look at the skin, the fat, the fascia, the muscle, the ligaments, the nerves, the bones and the joints, and if we do not look at the back in that way and look at the patients as diagnosticians, not as orthopedists, we are not going to get to the bottom of a lot of these back troubles. We have been talking about them all as mechanical things. Sometimes they are brought on mechanically, by overstrain, because a tissue is loaded up with toxins and has a lowered resistance to injury. A reduction in the elasticity of the muscles, the ligaments and the fascia of the back will be affected by mechanical strains, and we must find out what is causing the continuation of the disability. One cannot treat all these conditions mechanically or chemically or with cathartics. Most of us have been talking about using a shotgun prescription. The working men who are lying in bed and who are eating just as much as they did when working, without burning it up or eliminating it, will develop these same joint pains in other places. We are beginning to realize the fact that there are other things that cause back pain besides stooping and lifting, and it is up to us to become diagnosticians first and then decide on our treatment afterward.

DR. J. T. O'FERRALL, New Orleans: I believe that a very large number of the patients cited, practically all of them, are suffering from pressure neuritis. Dr. Albee has mentioned almost everything in connection with the low back pain except the most important thing, and that is the lumbosacral joint, and the ligaments that hold the fifth lumbar vertebra to the sacrum. The majority of these patients will give a history of trauma. I believe absolutely that the initial lesion is a trauma with a superimposed toxemia infection. In other words, I believe that it is a mechanical thing plus a medical affair of toxic absorption.

Clinical Notes, Suggestions and New Instruments

ADMINISTRATION OF PITUITARY EXTRACT BY NASAL SPRAY IN THE TREATMENT OF DIABETES INSIPIDUS

AN ATOMIZER MODIFIED FOR THE USE OF SMALL AMOUNTS OF LIQUID *

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AND
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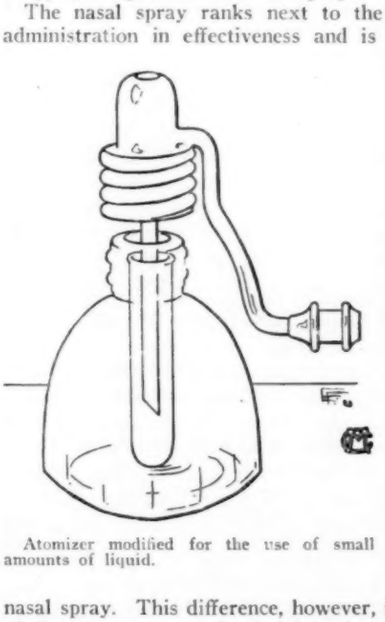
It has been pointed out by Rowntree[1] that pituitary extract acts specifically in the temporary relief of all the cardinal manifestations of diabetes insipidus. The extract is most effective when given hypodermically and is rarely effective when administered orally or rectally. As pointed out by Blumgart[2] and confirmed by Rowntree, it is of some value when administered intranasally, on a pledget of cotton, instilled by means of a dropper, or given as a nasal spray.

The nasal spray ranks next to the hypodermic method of administration in effectiveness and is less open to objections than the latter. It is therefore the preferred method in the treatment of those cases in which the desired antidiuretic effect is obtained. The therapeutic results in an illustrative case are shown in the accompanying tabulation. In this case the purified pituitary extract, described by Kamm and his associates,[3] was used with satisfactory results. The urinary output was reduced to a somewhat greater degree when the drug was administered hypodermically than when it was given by nasal spray. This difference, however, is not significant in view of the greater ease of administration by means of the spray.



Atomizer modified for the use of small amounts of liquid.

The ordinary atomizer is not suited to the administration of small amounts of fluid. In the illustrative case it was necessary to give 1 cc. of pituitary extract either in a single application or in a series of two or three applications. Glass atomizers have been designed to administer such quantities of fluid but

The Effect of Administering Pituitary Extract

Medication*	Daily Fluid Balance: Intake, Cc.	Daily Fluid Balance: Urinary Output, Cc.
Before treatment	7,200	9,550
Hypodermically	3,000	3,700
By nasal swab	5,400	5,400
By nasal spray	3,600	4,100

* 1 cc. of pituitary extract was used in each administration.

* From the Division of Medicine, Mayo Clinic.

1. Rowntree, L. G.: Studies in Diabetes Insipidus, J. A. M. A. **83**: 399-405 (Aug. 9) 1924.
2. Blumgart, H. L.: The Antidiuretic Effect of Pituitary Extract Applied Intranasally in Case of Diabetes Insipidus, Arch. Int. Med. **29**: 508-514 (April) 1922.
3. Kamm, O.; Aldrich, T. B.; Grote, I. W.; Rowe, L. W., and Bugbee: The Active Principles of the Posterior Lobe of the Pituitary Gland: I. The Demonstration of the Presence of Two Active Principles. II. The Separation of the Two Principles and Their Concentration in the Form of Potent Solid Preparations, J. Am. Chem. Soc. **1**: 573-601, 1928.

they are difficult to obtain. We have found that the ordinary atomizer, obtainable at any drug store, may readily be adapted for this service, as shown in the accompanying illustration. A small test tube (Wassermann tube) is inserted in the original atomizer bottle. It should be cut off at such a length that, when set within the original bottle, the open ends of the two are at the same level. The suction tube is straightened and cut off at a length that just reaches the bottom of the test tube. Because of this, an atomizer with a metal suction tube is preferable to one with a hard rubber suction tube. In the latter case, a short piece of soft rubber tubing, such as that used on a hemocytometer, may be used as a suction tube.

With this arrangement the test tube serves as an inner container with a capacity of from 1.5 to 2 cc. The apparatus is emptied completely in use, so that it furnishes a simple and convenient method for the administration of small amounts of solution by spray. Used with pituitary extract, it is a satisfactory aid in the treatment of diabetes insipidus.

METHOD OF APPLYING VIBRATORY MASSAGE TO THE PROSTATE: PRELIMINARY REPORT

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It has long been recognized that massage is a most valuable agent in the treatment of pathologic conditions of the prostate of chronic inflammatory type. Perhaps the most beneficial result of this procedure is found in the increased flow of blood to the organ and adjacent tissues.

The outstanding disadvantage of prostatic massage is that it requires a variable amount of physical pressure which, when applied to the diseased organ, may produce a distinctly unpleasant sensation, if not actual pain. Not infrequently patients fall in a dead faint even on the most gentle contact of the finger with the prostate.

To obviate these unpleasant sequelae, it has occurred to me that all the advantages and benefits of massage might be obtained without its annoying possibilities if oscillation or vibration could be substituted for the pressure of manual massage. Every man who has had vibratory massage of his face after a shave knows what a pleasantly soothing sensation is produced by the rapid vibrations of the motor transmitted to the face through the finger tips of the barber. For several years the problem of applying similar vibratory massage to the prostate has engaged my attention. The major difficulty in the solution of the problem lay in the necessity of bringing the vibratory impulse to the tip of the index finger in the rectum.

This difficulty has been obviated in the apparatus here illustrated. So far as I have been able to ascertain, the method employed has not hitherto been recorded. The apparatus may be described as an arrangement devised for the purpose of transmitting a vibrating impulse to the index finger in the rectum in contact with the surface of the prostate. It has been employed in more than fifty individual cases thus far, with surprisingly satisfactory results.

The advantages over ordinary manual massage which this method has made evident are as follows:

1. There is a complete absence of pain or other disagreeable sensation.

2. There is a distinctly agreeable and pleasant sensation in the prostatic region.

3. Prostatic pus and secretion may be expressed by this method with the slightest pressure of the finger; in fact, the most satisfactory result is attained with the lightest possible contact between finger and prostate.

4. Patients who dislike manual prostatic massage find this method most agreeable and beneficial.

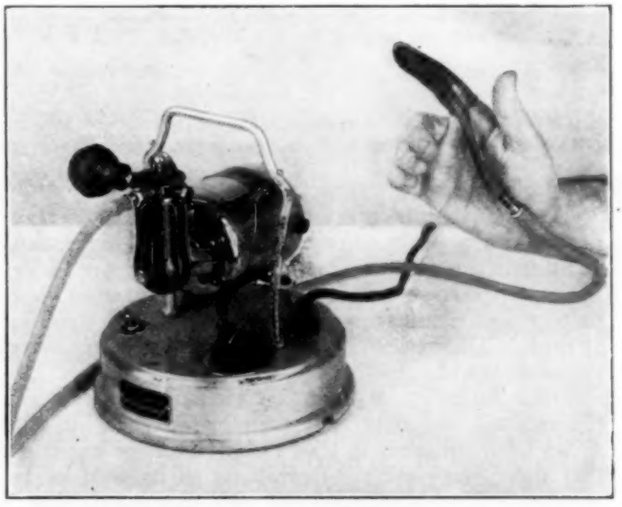
5. Patients observe a pleasant sensation of warmth in the prostate, which lasts from fifteen to forty-five minutes; this is probably due to an increased flow of blood to the area.

The apparatus consists of two distinct parts: (1) a motor and air pump for producing the oscillations, and (2) an "applicator" for transmitting the oscillations to the finger tip. The motor and pump are comprised within the Hays comprex oscillator, which has been successfully employed in the treatment of ear and nose conditions by Dr. Harold Hays of New York. The oscillator consists of a high speed universal motor directly attached to a small air pump. The pump is mounted on one end of the motor housing and connected directly to the motor shaft without the use of gears or belts. The pump is capable of a very high speed, about 8,000 revolutions a minute. These rapid oscillations of the piston are imparted to the air in the cylinder and are conducted from the cylinder to the applicator used through a pure gum rubber tube 4 feet long.

When used for purposes of massage, the vibration can be regulated to any desired degree. By means of a rheostat the motor speed can be adjusted, thereby changing the frequency of vibration. A small valve is provided on the head of the cylinder to control the intensity of the vibrations. Both of these characteristics therefore are variable, one independently of the other; i. e., a very gentle massage can be obtained at a high rate of vibration, or any other desired combination.

The "applicator" consists of a thin walled rubber tube about 5 inches long and one-fourth inch in diameter. A fin of thin, strong metal is inserted in one end of the tube to flatten it. Over the flat end, a small rubber bulb similar to a medicine dropper is cemented. The opposite end of the rubber tube is connected with the oscillator and disconnected when not in use. When the pump is turned on, the small rubber bulb is set into vigorous vibration.

In applying this method, the rubber bulb is placed against the index finger and both finger and bulb are covered with a finger cot, as shown in the accompanying illustration, which is



Oscillator and applicator in readiness for vibratory massage of prostate.

lubricated and inserted into the rectum in the usual way. The switch is turned on with the free hand and the vibration instantly is felt at the finger tip. This is moved about over the prostatic surface as in ordinary manual massage, except that no pressure is made; the less pressure, the more vibration. The frequency and intensity of the oscillations can be increased or diminished as desired by simply moving a dial with the free hand.

It is my practice to maintain the vibration for a period of about one minute; the switch is turned off, vibration ceases immediately and the finger is withdrawn from the rectum. The urine voided after the treatment presents the same material that is expressed by manual massage. It may be added, in passing, that I have thus far been unable to apply vibration to the seminal vesicles satisfactorily possibly because of insufficiently developed technic.

114 East Sixty-First Street.

Ancient Views on Spleen.—Macht also states that a study of ancient and modern literature finds references concerning the relation of the spleen to running. In the Natural History of Pliny it is stated that runners in the race that are troubled with spleen have a device to burn and waste it with a hot iron. In Arabic literature there is the same—that a horse runs better without a spleen.—Bloodgood, J. C.: *Ann. Surg.*, September, 1928.

Special Article

THE STATUS OF INTRAVENOUS THERAPY

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(Continued from Vol. 90, p. 767)

V. LIMITATIONS TO THE USE OF QUININE INTRAVENOUSLY IN THE TREATMENT OF MALARIA

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This report has been prepared at the request of the committee and is published with its unanimous approval.

CARY EGGLESTON, Chairman.

The intravenous injection of quinine in the treatment of malaria appeals to one, *a priori*, as being rational. It affords the opportunity of bringing the specific drug in known dosage and maximum concentration immediately into contact with the parasites in the blood stream. Theoretically this would appear to be the desideratum of effective therapy.

From the practical point of view, however, ever since the method was first advocated by Baccelli [1] in 1890, it has been apparent to those who had large experience that there were certain limitations to its field of usefulness. The mechanism of the medicinal cure of malaria is not so simple a matter as it was at first thought. The intravenous injection of quinine is not without danger to the patient. Without attempting a chronological review of the literature, it is my purpose in this article to discuss the present status of knowledge regarding the action of the drug and the dangers of its intravenous injection, with a view toward defining anew the proper field of usefulness of this method of administration.

MODE OF ACTION OF QUININE

Before discussing the intravenous injection of quinine, it will be profitable to consider what is known of the mode of its action, however administered. There is a widely prevalent idea that the favorable action of quinine in malaria is exerted by a direct action of the drug, as such, on the parasites in the red cells.

Some years ago Bass [2] attempted an experimental demonstration of this inference. He prepared cultures in vitro of blood containing large numbers of *Plasmodium falciparum* ring forms. To one of these cultures he added an amount of quinine dihydrochloride sufficient to effect a concentration of 1 in 4,000, which, he calculated, corresponded to a dose of 2 Gm. (30 grains) given to a man weighing 150 pounds (68 Kg.). After five hours' incubation, the parasites in preparations made from the quinine culture appeared to stain poorly and to have been arrested in development, as compared with preparations made from the culture to which no quinine had been added. He concluded tentatively from this experiment that quinine in therapeutic proportions prevents the growth of malaria plasmodia in vitro. The conditions of this experiment, however, do not warrant the conclusion that a similar effect is obtained by therapeutic administration in man.

Incidental to studies of the methods and precautions to be observed in conserving and shipping malaria blood in the treatment of general paralysis, Kirschbaum [3] brought together in a test tube equal parts of blood containing tertian parasites and a solution of 1:5,000 quinine. Kept at incubator temperature (38 C.) this blood remained infectious up to twenty-four hours, as proved by inoculation into patients. He states that the morphology of the parasites was not essentially changed as compared with parasites which had been conserved in dextrose blood without the addition of quinine for the same length of time. Also there were no changes in the clinical course of the malaria which was induced with the quinine treated blood. From this he concludes that the therapeutic action of quinine must be indirect.

Even if so large a dose as the dilutions used by Bass and by Kirschbaum in their experiments would imply were injected intravenously, the resulting concentration would be maintained only for a very brief interval. It has been repeatedly demonstrated [4] on experimental animals and in man that, within from three to five minutes after an intravenous injection, quinine has almost completely disappeared from the blood.

Moreover, from observations made on the blood of patients under treatment for malaria by oral administration or by intramuscular injections, it may be concluded that full therapeutic results do not depend directly on a high concentration of the drug in the blood stream. Thus, while Morgenroth [5] estimated the quinine content of the blood as 1 in 20,000 a few minutes after intravenous injection, it was only 1 in 150,000 after oral administration of therapeutic doses.

In eleven patients in the Liverpool series of Ramsden, Lipkin and Whitley [4] the quinine content of the blood was estimated. In those three in whom it was highest and cinchonism was greatest, *Plasmodium vivax* persisted longest in the peripheral blood. In one of the three (taking 5 grains, or 0.3 Gm., of quinine three times a day by mouth six days a week for three weeks) the parasites never left the cutaneous circulation. In another these workers found the maximum strength of quinine to be 1 in 100,000 twenty-seven hours after its administration in a case in which parasites persisted longer than in most cases.

Hatcher and Gold [4] made estimations on twelve specimens averaging about 0.25 per cent of the total blood,

1. Baccelli, Guido: Leinjezioni intravenose dei sali di chinina nella infezione malarica, Gazz. d. osp. **11**: 90-92, 1890; Riforma med. **6**: 14-16, 1890.

2. Bass, C. C.: Some Observations on the Effect of Quinine Upon the Growth of Malaria Plasmodia in Vitro, Am. J. Trop. Med. **2**: 289-292 (July) 1922.

3. Kirschbaum, Walter: Methoden und Kautelen einer Malaria-Blut-Konservierung und-Versendung zur Behandlung der progressieven Paralyse nach beobachtungen an tertianaplasmodien in Vitro und an impfversuchen, Klin. Wchnschr. **2**: 1404-1406 (July 23) 1923.

4. Ramsden, W.; Lipkin, I. J., and Whitley, E.: On Quinine in Animal Tissues and Liquids with Methods for Its Estimation, Ann. Trop. Med. **12**: 223-258 (Oct. 31) 1918. Hatcher, Robert; and Weiss, Soma: Studies on Quinine, J. Pharmacol. & Exper. Therap. **29**: 279-296 (Oct.) 1926. Weiss, Soma; and Hatcher, Robert: II. Studies on Quinine, ibid. **30**: 327-333 (Feb.) 1927. Hatcher, R. A., and Gold, Harry: IV. Studies on Quinine, ibid. **30**: 347-350 (Feb.) 1927.

5. Morgenroth, J.: Die Therapie der Malaria durch Chinaalkaloide und ihre theoretischen Grundlagen, Deutsche med. Wchnschr. **44**: 961-965 (Aug. 29), 988-992 (Sept. 5) 1918.

drawn from twelve patients after intervals of about thirty minutes in seven cases, and up to two days in others, following the administration of quinine in varying doses by mouth and intramuscularly. Quinine could not be detected in any single specimen of blood, but a trace was recovered from the combined extracts of all the specimens. These twelve patients took a total of 14,500 mg. (940 grains).

In the treatment of general paralysis of the insane with experimentally produced malaria, a relatively small amount of quinine (10 grains, or 0.65 Gm., by mouth three times a day for three days) is usually sufficient to effect a rapid and complete cure.[6]

The experimental and clinical data available, therefore, do not lend any support to the view that the cure of malaria depends primarly on immediate contact of the drug in high concentration with the parasite in the blood.

Whether given orally, intramuscularly or intravenously, quinine finds its way into the blood stream. About 25 per cent is excreted in the urine unchanged, within six hours after administration, though traces are excreted during several days.

The remainder is rapidly eliminated from the blood by the tissues. A large proportion is fixed in the capillaries, and traces can be demonstrated in the various organs—the liver, suprarenals, kidney, intestinal wall, lungs and brain—and in the muscles and lymph glands. The greater part of an intravenous dose of quinine is almost certainly broken up into simpler compounds in the liver.

In view of the present state of knowledge, therefore, the exact mode of action of quinine in effecting a cure from malaria is uncertain. It does not appear to be a direct action of the drug on the parasite in the red blood cells, favored by brief contact with high concentrations. Apparently the action is indirect. The effective therapeutic agent may be a metabolite resulting after fixation in the capillaries or in the liver, or quinine or its decomposition products may activate, or favor production of, some natural antibody, as suggested by Yorke and Macfie.[6] No guide is afforded by experimental studies as to the best method of administration.

EFFICIENCY OF INTRAVENOUS INJECTIONS

Since the whole history of quinine is a testimonial to the value of empiric observation, due weight must be given to the observations of clinicians with regard to the relative value of intravenous injections of quinine as compared with its administration by other routes. In reviewing these contributions, it is necessary to bear in mind that the "cure" of malaria has two meanings, which for the sake of clearness should be defined. As usually applied, the term denotes a "clinical cure"; that is, the patient is completely relieved of his symptoms and the parasites have disappeared from the cutaneous blood. No less important to the patient himself and more important to the community is the sterilization, in which not only is the patient relieved of symptoms but all the parasites are destroyed and relapse does not occur.

While it is comparatively easy to obtain evidence on the value of any method in the treatment of malaria with regard to its efficacy in accomplishing a clinical cure—cure of the acute attack—it is exceedingly difficult to obtain exact information with regard to a sterilization. The latter necessitates the continuous observation of the patient over a long period of time, at least six months to one year under circumstances in which a new infection cannot be contracted.

Many clinicians have reported on the use of intravenous injections of quinine.[7]

The most extensive and thorough studies of the treatment of malaria by various methods are those carried out by the British on soldiers infected during the World War, especially those by J. W. W. Stephens and his associates [8] at the Liverpool School of Tropical Medicine, and those by Acton, Curjel and Dewey [9] at Dagshai, India.

These war studies have the advantage that the various forms of treatment were carried out under the same conditions and on the same selected groups; that carefully controlled observations on the parasites in the blood were conducted during the period of treatment, and that a majority of the patients were kept under observation for relapse for a long period of time in circumstances in which reinfection could be excluded. They have the disadvantage of being limited to soldiers who had been invalided on account of malarial infection during war service. From a review of all these clinical observations, certain facts seem to have been established.

Comparative Results of Intravenous and Oral Administration of Quinine

Method	Disappearance of Parasites in Hours						Total Cases Observed
	24	48	72	96	120	144	
Intravenous	38	29	5	1	...	...	73
Oral	..	22	42	31	5		100

The intravenous administration of quinine in proper dosage usually cures the acute attack of simple tertian malaria and causes the parasites to disappear from the cutaneous blood. Ordinarily, however, it possesses no advantage over oral administration except with regard to the speed with which the therapeutic effect is established. The accompanying table from the Dagshai studies illustrates the point. By whichever method quinine is given in benign tertian infection, the parasites disappear from the blood in from one to four days.

So far as the prevention of relapse is concerned, there does not appear to be any advantage in giving the quinine intravenously. Whatever method of administration is used, from one fourth to one third of the cases of benign tertian are cured by a single treatment. In the rest there is a relapse sooner or later.

The evidence for the effectiveness of intravenous injections in the treatment of malignant tertian (estivo-autumnal) malaria is not so clear. In the Liverpool series single injections in two cases, 15 grains (1 Gm.) in one and 10 grains (0.65 Gm.) in the other, did not

6. Yorke, Warrington; and Macfie, J. W. S.: Certain Observations on Malaria During Treatment of General Paralysis, Lancet **1**: 1017-1019 (May 17) 1924.

7. Wright, T. E.: Treatment of Malaria Relative to Its Eradication, South. M. J. **9**: 313-320 (April) 1916. James, S. P.: The Intravenous Administration of Quinine Bihydrochloride in Malaria and a Remark upon the Form of the Parasite Responsible for True Relapse, J. Roy. Army M. Corps **29**: 317-322 (Sept.) 1917. Thomson, J. D.: Notes on Malaria, ibid. **29**: 379-411 (Oct.) 1917. Willcox, W. H.: Treatment of Malaria, Brit. M. J. **2**: 796-797 (Dec. 13) 1919. (See correspondence by this author and Sir Ronald Ross, Dec. 27, 1919, Jan. 3, 24, 31, 1920.) Patrick, Adam: Experiences with Intravenous Injections of Quinine and Antimony in the Treatment of Malaria, J. Roy. Army M. Corps **32**: 407-429 (June) 1919. Pitt, G. N.: Intravenous Administration of Quinine in the Treatment of Malaria, Guy's Hosp. Rep. **71**: 21-25 (Jan.) 1921. Fletcher, William: Notes on the Treatment of Malaria with the Alkaloids of Cinchona, London, John Bale Sons & Danielsson, 1923. Cantlie, N., and Moubarak, E. S. Y. E.: Preliminary Observations of the Treatment of 1,314 Cases of Malaria by the Intravenous Injection of Quinine, J. Trop. Med. **27**: 37-39 (Feb. 15) 1924. Wirssaladse, S.: Zur Indikation der intravenosen Chininjektion bei malaria, Ztschr. f. klin. Med. **101**: 320-330, 1925.

8. Stephens, J. W. W.: Studies in the Treatment of Malaria: XXXII. Summary of Studies I-XXXI, Ann. Trop. Med. **17**: 303-316 (Oct. 13) 1923.

9. Acton, H. W.; Curjel, D. F., and Dewey, J. O.: The Diagnosis and Treatment of Benign Tertian and Malignant Tertian Fevers: Sections I-III, Indian J. M. Research **8**: 750-871 (April) 1921.

cause the parasites (trophozoites or gametes) to disappear from the blood. Multiple injections were given in five cases—four in one case and six in four—on Mondays, Wednesdays and Fridays, 10 grains (0.65 Gm.) being administered on every occasion. The treatment did not cause the parasites (trophozoites or gametes) to disappear from the cutaneous blood. Other investigators have apparently had much better results in curing a simple acute attack of estivo-autumnal malaria with intravenous injections, but it is questionable whether there is any advantage over oral administration. The treatment is usually continued by the latter route after one or two intravenous injections. In this connection, it is to be recalled that the estivo-autumnal parasite sporulates in the internal organs, particularly in the portal area. It may well be that the greater concentration of quinine secured in this area by oral administration and absorption from the intestinal tract ordinarily renders the administration by this route preferable to intravenous injection in the treatment of this form of malaria.

The tendency to relapse is not so great in estivo-autumnal as in tertian malaria. There is no evidence to indicate that intravenous injections are more effective than oral administration in ridding the body completely of both the schizonts and gametes.

DANGERS TO THE PATIENT

The value of a method of treatment must be judged not only on the basis of its effect on the parasite but also from the point of view of its toxicity to the tissues of the host. According to the hypothesis of Ehrlich, the ideal of chemotherapy is that a drug should be so administered as to select and destroy the parasitic substance, leaving unscathed the protoplasm of the host. The latter requirement is even more important than the former in a simple uncomplicated case of tertian malaria, in which the natural defenses of the host, unassisted by medication of any sort, are usually sufficient to overcome the parasite. Quinine injected intravenously into man may manifest quite definite effects on the circulatory system, the nervous system, and the skin and subcutaneous tissues when these are involved at the site of injection.

It has long been known that quinine is a circulatory depressant. In this connection it is interesting to note that the closely related alkaloid quinidine (the dextrorotatory, stereo-isomer of quinine) has recently received considerable attention in the treatment of auricular fibrillation. McCarrison and Cornwall have shown [10] that all salts of quinine produce a profound fall in blood pressure after intravenous injections in sheep. Brahmachari [11] demonstrated that an abrupt fall in blood pressure can be produced in man by the rapid intravenous injection of concentrated solutions of quinine. The possibility of producing this effect on the patient who is being treated for malaria must be considered carefully. If the patient is already suffering from circulatory embarrassment or the severe hypotonia sometimes associated with chronic estivo-autumnal infections, the added burden produced by the well intended therapeutic effort may result in a fatal outcome instead of improvement.

To what extent the subjective symptoms of acute cinchonism are to be attributed to a direct action on nervous tissue or are dependent on circulatory changes is not altogether clear. However, that the drug has an affinity for nervous tissue is demonstrated by its action on the respiratory center in lethal doses given to experimental animals; on the retina (toxic amblyopia in man); on the auditory ganglions (toxic deafness), and on peripheral nerves (paralysis following intramuscular injections). Subjective symptoms of acute cinchonism of a more or less severe degree invariably follow the rapid intravenous injection of concentrated solutions of quinine in man.[12] The severity of the reaction seems to depend in part on the rapidity of the injection, but the well known factor of individual idiosyncrasy comes into play. In the usual run of cases, the reaction is disagreeable to the patient but not alarming. Following the emptying of the syringe, he may complain of a bitter taste, ringing in the ears, blurring of vision and a queer, confused dizzy feeling. Occasionally, in addition to the symptoms enumerated, the patient breaks out into a profuse sweat, the pupils become dilated, his expression becomes fixed and staring, the facial muscles twitch, and a convulsion seems imminent. The reaction usually reaches its maximum development in from three to ten minutes and then gradually subsides. Sometimes it is an hour or two before the patient feels completely normal again.

The destruction wrought on the tissues by concentrated solutions of quinine has been emphasized by a number of observers in discussing the relative advantages and disadvantages of intramuscular and subcutaneous injections. The subject has been treated experimentally by Dudgeon [13] and its clinical application has been discussed very fully by Fletcher.[7] It suffices to point out that the necrotizing action of concentrated solutions of quinine is similar to that of arsphenamine, and all precautions should be observed to guard against extravasation around the point of injection. An accident of this nature is almost sure to be followed by swelling, pain, loss of motion, and, finally, necrosis with sloughing and a resultant wound which is extremely slow to heal. Thrombosis of the vein used for the injection sometimes occurs.

INDICATIONS FOR THE USE OF INTRAVENOUS INJECTIONS OF QUININE

From the foregoing it is evident that, potentially at least, the intravenous injection of quinine holds possibilities for harm. Experimental and clinical observations have failed to indicate that this route of administration by itself possesses any advantage over oral administration in the cure of malaria except with regard to the speed with which therapeutic control is inaugurated. For these reasons it does not seem necessary or desirable to use the intravenous route of administration in the mild or moderately severe acute and chronic malaria infections ordinarily encountered, whether tertian or estivo-autumnal. The method should be reserved for urgent clinical indications.

Inability to control the acute attack by oral administration of quinine, especially in tabloid form, may be due to failure of absorption of the drug from the intestinal tract in sufficient quantity. The use of capsules and the administration of a purgative frequently overcomes this difficulty, and this is routine practice with most medical men. If, with such treatment, clinical improvement and disappearance of the parasites from the cutaneous blood does not follow in the usual

10. McCarrison, Robert; and Cornwall, J. W.: Pharmacodynamics of Quinine, Indian J. M. Research **6**: 248-261 (Jan.) 1919.
11. Brahmachari, U. N.: Dangers of Rapid Intravenous Injection of Concentrated Solutions of Quinine Bihydrochlor, J. Trop. Med. **25**: 209-211 (July) 1922.
12. Maxcy, K. F.: Limitations to the Use of Quinine Intravenously in the Treatment of Malaria, Pub. Health Rep. **37**: 693-701 (March 24) 1922; reprint 736.
13. Dudgeon, L. S.: On the Effects of Injections of Quinine into the Tissue of Man and Animals, J. Hyg. **18**: 317-336 (Oct.) 1919.

period of from three to five days, intravenous or intramuscular injection is to be considered.

In pernicious malaria with vomiting and severe gastro-intestinal symptoms, administration of quinine by mouth is unpractical and uncertain of absorption. Recourse must be had to either an intramuscular or an intravenous injection. On account of the danger of local necrosis and abscess formation from intramuscular injections, the intravenous route is to be preferred, provided facilities are available for its proper administration. Usually one dose of 10 grains (0.65 Gm.) is sufficient to control the vomiting, but if it persists the following day, a second injection may be given. As soon as the patient is able to take medication by mouth, the treatment should be continued by this route.

When patients are algid or in collapse, considerable care must be exercised. In the presence of cyanosis, respiratory distress, rapid, feeble pulse, and low blood pressure, especially in an elderly person, it can be inferred that the myocardium is severely involved. Supportive measures should first be undertaken. A preliminary intramuscular injection of quinine is justified, and, if the patient's condition improves, this may be followed from six to eight hours later by a small intravenous injection given very slowly.

Finally, there are the cerebral forms of estivo-autumnal malaria, with delirium and coma, in which oral administration is out of the question. Here the celerity with which a therapeutic effect is obtained may determine the outcome. If the capillaries of the brain become extensively blocked with emboli of pigment and parasites, it is obvious that quinine, however administered, will be of little avail. One must therefore initiate therapeutic control as rapidly as possible, beginning with an intravenous injection.

When clinical indications exist for this method of giving quinine, there should not be any hesitation in employing it. With careful technic the dangers to the patient can be minimized. It has a distinct place in the treatment of certain types of malaria, but is not necessary or desirable for the ordinary run of infections.

PRECAUTIONS AND TECHNIC

When the intravenous method is to be used the possible effects of the drug on the patient must be borne in mind. Patients who have been taking quinine by mouth should not receive it intravenously until the lapse of two or three days in order to avoid the dangers of cumulative toxic effects. It is particularly necessary to be sure that the patient does not possess an idiosyncrasy toward quinine, and to observe the utmost care with patients who may already be suffering from a circulatory embarrassment. Three cardinal principles should be observed:

A. Careful aseptic technic.

B. Administration of the drug in moderate doses and in dilution.

C. Introduction of the solution into the blood stream slowly.

All the precautions which are taken in giving a dose of arsphenamine should be used. If the patient is in a hospital where full equipment is at hand, it is preferable to administer the solution from a gravity apparatus through a small bore needle (20 gage). Ten grains (0.65 Gm.) of quinine dihydrochloride should be dissolved in about 100 cc. of physiologic sodium chloride solution (0.85 per cent), filtered and sterilized by boiling or in an autoclave. The usual technic of intravenous injection should be observed, particular care being taken to avoid extravasation of the fluid. The patient should be carefully watched, and the injection discontinued immediately if symptoms of circulatory collapse or nervous shock develop. If the patient is in a critical state, it is advisable to take frequent blood pressure readings. The therapeutic action of epinephrine is antagonistic to that of quinine, and is of use in combating circulatory depression.

When the injection is an emergency measure carried out at the home of the patient, the sterile ampules of quinine dihydrochloride (10 grains, or 0.65 Gm., in 20 cc. of solution) available on the market are useful. The injection may then be made with a 25 cc. syringe, but great care should be exercised to give the solution slowly.

When given with due attention to these details, the method is practically without danger, and the average patient experiences little or no discomfort.

SUMMARY

There is little or no evidence to show that the therapeutic effect of quinine is secured by a direct action of the drug as such on the parasites in the red blood cells. It is probable that it acts indirectly by the formation of a decomposition product or by stimulation of some natural antibody, or through a combination of these. The intravenous injection of quinine does not possess any superiority per se over ordinary administration by mouth, and the method is not without danger to the patient. It should be reserved for those patients who present distinct clinical indications, particularly when oral administration is not practical for one reason or another. With proper precautions as regards technic, the dangers of the method may be largely obviated.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

MULFORD ACIDOPHILUS BACILLUS BLOCKS.—A culture of *B. acidophilus* (Y strain), embedded in a 2 per cent agar jelly containing milk powder, lactose, *d*-glucose and sucrose, and marketed in the form of chocolate covered cubes, each of which contains approximately 150 billion viable organisms (*B. acidophilus*) at the time of issue.

Actions and Uses.—See Lactic Acid Producing Organisms and Preparations, New and Nonofficial Remedies, 1928, p. 228. Evidence was submitted to the Council showing that administration of Mulford acidophilus bacillus blocks is accompanied by a marked decrease in the number of gram-negative *B. coli* types and an increase in the gram-positive *B. acidophilus* types in the feces.

Dosage.—Two "blocks" daily, one after the morning and one after the evening meal. Mulford acidophilus bacillus blocks are marketed in packages of one dozen blocks with a stated expiration date, at which date each block should contain at least 10 billion viable acidophilus bacilli.

Manufactured by H. K. Mulford Co., Philadelphia. U. S. patent 1,540,951 (June 9, 1925; expires 1942). U. S. trademark 205,541.

Mulford acidophilus bacillus blocks are prepared by growing the organisms in a medium made by digesting skimmed milk with trypsin. After digestion has proceeded for a short time any undigested casein is precipitated by rendering the medium acid and separated. The medium is then sterilized, cooled, planted and incubated. The acidophilus bacilli are harvested by centrifugation and a suspension is made in a trypsin-digest medium so adjusted that 2 cc. contains 1,000 billion acidophilus bacilli. The suspension is at once incorporated with the embedding medium, which consists of about 2 per cent of agar, containing milk powder, lactose, *d*-glucose and sucrose; this is allowed to congeal in an icebox and cut into cubes, each of which contains 2 cc. of the original suspension; each cube is then rolled in powdered sugar and coated with chocolate.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 3, 1928

THE HORMONE OF THE SUPRARENAL CORTEX

The suprarenal glands are among the structures that are essential to life. Their functional significance was brought into prominence more than three quarters of a century ago in connection with Addison's description, in 1855, of the disease that bears his name, and Brown-Séquard's demonstration, in the following year, that extirpation of the suprarenals is incompatible with life. Forty years later, Oliver and Schäfer directed attention to existence, in the medullary portions of the glands, of a substance capable in minute quantities of producing marked pressor effects on the arterial circulation. This led in due season to the identification of epinephrine as the active component. For a time it was anticipated that this substance would prove to be the indispensable hormone of the suprarenal glands. Such conjectures were presently doomed to be discarded when it became evident, through carefully devised experiments, that epinephrine would not support life in a suprarenalectomized animal and that the suprarenal medulla could be ablated without invariably fatal outcome, whereas this was not true of the cortex of the glands.

The main test of the function of any substance as the essential hormone of an indispensable gland consists in replacement therapy. Will the chemical product in question help to preserve life and its characteristic functions when the gland is missing? This is the problem presented with respect to thyroxin in connection with the thyroid and to the new parathyroid extracts when the corresponding glands are removed. Evidence has now accumulated to demonstrate that the suprarenal cortex does contain a substance which after extraction can be introduced into animals deprived of their suprarenals and can prolong life and the period of good health beyond the maximum periods observed in untreated individuals. This is seen in the studies of Hartman [1] at the University of Buffalo on cats and those of Rogoff and Stewart [2] of the Western Reserve University School of Medicine in Cleveland on dogs.

One of the stumbling blocks encountered in the way of success has been the difficulty of excluding epinephrine without destroying the cortical hormone because the presence of the medullary product in appreciable amounts had proved detrimental. Hartman [3] and his associates have at length succeeded in making the desired separation. They have been able to remove a potent substance from cortical extracts by the familiar procedure of "salting out" with common salt. Cortin is proposed as the name for this substance. Completely suprarenalectomized cats injected twice daily with this substance have survived an average of 27.4 days or longer, as compared with from five to six days for controls. This discovery has already made it possible to produce experimentally conditions simulating chronic suprarenal insufficiency by injecting subminimal amounts of cortical extracts into animals deprived of their suprarenals. In general, the symptoms are those of acute insufficiency except that they tend to develop more gradually. The animals were less resistant to cold and infections. They fatigued more readily than did normal cats. Overeating caused the blood urea to rise, and brought on symptoms of suprarenal insufficiency. The possibility of an interrelationship between the suprarenals and the kidneys has repeatedly been asserted, most recently by Yonkman [4] of the State University of Iowa. The fact that the blood picture following bilateral suprarenalectomy reveals a condition of acid intoxication, retention of nitrogenous constituents, inorganic phosphorus and inorganic sulphate, indicates, he believes, that severe renal impairment of some sort probably follows as a direct consequence of loss of suprarenal cortical tissue. Renal function tests reveal diminished output by the kidney. The Buffalo experiments of Hartman, Griffith and Hartman [5] show that control of the diet is extremely important in suprarenal insufficiency. This may be accounted for in part by lowered renal function. It seems, therefore, that minimal quantities of food, and choice of those which make the least demand on the kidneys, is desirable. Indirectly this failure of the kidney, Hartman, Griffith and Hartman continue, will react on other tissues of the body. The water balance and the proportion of excretory as well as useful substances may be upset. This in itself might lead to grave consequences. However, they conclude that the cortical hormone may have a direct effect on other tissues. Whatever the effect, the changes produced are not prompt, as with insulin or the parathyroid hormone.

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2. Rogoff, J. M., and Stewart, G. N.: Studies on Adrenal Insufficiency in Dogs: V. Am. J. Physiol. **84**: 660 (April) 1928.

3. Hartman, F. A.; Brownell, K. A.; Hartman, W. E.; Dean, G. A., and MacArthur, C. G.: The Hormone of the Adrenal Cortex, Am. J. Physiol. **86**: 353 (Sept.) 1928.

4. Yonkman, F. F.: The Acid Intoxication of Adrenal Insufficiency in Dogs, Am. J. Physiol. **86**: 471 (Sept.) 1928.

5. Hartman, F. A.; Griffith, F. R., Jr., and Hartman, W. E.: Observations upon Adrenalectomized Cats Treated with the Cortical Hormone, Am. J. Physiol. **86**: 361 (Sept.) 1928.

DENGUE FEVER

Mosquitoes have demonstrated again their power to incapacitate the entire populace of cities within a short time. No one knows accurately how many cases of dengue they recently caused in Greece. According to a recent report promulgated by the Health Section of the League of Nations,[1] a partial census showed that 239,000 cases developed in Athens alone in about one month. Official estimates indicate that nearly 90 per cent of the population of Athens and Piraeus were ill with dengue. Government offices and business houses were greatly affected. All but one of the staff of the consul general of the United States at Athens contracted dengue. Thousands of cases developed in other cities of Greece and nearby islands. The onset of the epidemic was so violent that it was difficult to maintain the various public services.

Dengue is considered a mild disease which strikes quickly and is over within a few days. The symptoms in the Greek epidemic were severe. It was the cause of death of many aged persons and of others who were ill with chronic diseases. In Athens in August, out of 1,268 deaths from all causes 413 were due to this disease, and in Piraeus 176 died of dengue out of 592 total deaths. The predominant symptoms in Greece were nervous, transient paralysis, amaurosis, and encephalitic and psychic symptoms.

Greece suffered from dengue in 1889, but conditions were never better for the spread of the disease than in 1928. The cities had doubled their population by the influx of refugees from the Near East. The water systems and general sanitation had not kept pace with the increase in population. Improvised water containers and pools of water provided mosquitoes with a means of propagation. In 1922 a great epidemic of dengue occurred in the United States. Levy [2] says the board of health of Texas estimated that more than 500,000 cases occurred in Texas between June and December. Other Southern states had thousands of cases. There was an incalculable economic loss, estimated in Texas alone at 3,750,000 working days. Galveston, in 1897, had an epidemic of 20,000 cases; Savannah,[3] in 1922, had 30,000 cases. Dengue is endemic in the tropics, whence it is carried to the temperate countries. An outbreak occurred in Colombo in 1926; a few months later in South Africa; soon after in the Mediterranean; in Tunis and Spain in August, 1927; in Syria in September and in Palestine in November. But in none of these countries was the outbreak of 1927 followed by an epidemic in 1928. Dengue is transmitted by the same mosquito that transmits yellow fever. Indeed, many cases in Louisiana in 1922 were thought to be atypical cases of yellow fever.[4] The infectious agent has not been discovered for dengue, as it probably has not for yellow fever. The ability of dengue to incapacitate many people quickly makes it an important health problem. Knowledge gained chiefly through the sacrifice of American soldiers [5] and the experiments of army medical officers makes its prevention possible. The way to do it is to prevent the breeding of mosquitoes.

1. Epidemiological Report of the Health Section of the League of Nations, Sept. 15, 1928, p. 3.
2. Levy, M. D.: Epidemiology and Prevention of Dengue, Texas State J. Med. **19**: 182 (July) 1923.
3. Myers, W. H.: The Epidemic of Dengue in Savannah in 1922, J. M. A. Georgia **12**: 318 (Aug.) 1923.
4. Scott, L. C.: Dengue Fever in Louisiana, J. A. M. A. **80**: 387 (Feb. 10) 1923.
5. Siler, J. F.; Hall, M. W.; Hitchens, A. P.: Results Obtained in Transmission of Dengue Fever, J. A. M. A. **84**: 1163 (April 18) 1925. Schule, P. A.: Dengue Fever: Transmission by Aedes Aegypti, Am. J. Trop. Med. **8**: 203 (May) 1928.

LENDING AID AND COMFORT TO QUACKERY

The federal officials whose business it is to prosecute the exploiters of medical fakes and frauds have for years complained that the government is much hampered in its legal assaults on quackery by the fact that physicians of standing will sell their expert testimony to the nostrum exploiters. Regardless of the nature of the evidence or opinion, the appearance of a reputable physician on the side of the quack may lead a jury to believe that the nostrums under consideration are worth while and that the claims made for them are true.

Recently a hearing or, rather, a series of hearings has been held before the Federal Trade Commission in the matter of a quack "obesity cure" known as "Marmola," a nostrum with an interesting background. It is sold by one Edward D. Hayes, who at the present time does business under the trade name "Raladam Company." The stuff used to be put out by the "Marmola Company," which was another trade name used by Hayes, but in the latter part of 1926 the postal authorities were about to issue a fraud order against the Marmola Company, when Hayes submitted an affidavit declaring that he would absolutely discontinue the Marmola business on April 1, 1927. Hayes did discontinue the sale of Marmola through the mails at that time but created the Raladam Company, which continues to sell Marmola through the retail drug stores.

Edward D. Hayes has, for a quarter of a century, been quacking it. More than twenty years ago he was connected with a fraudulent outfit known as the "Dr. Knapp Medical Company," which was in the "weak-men-cure" business. He was also connected with the "Dr. Rayner Medical Company," which was practically identical with the Knapp concern. These concerns published advertisements that were so filthy that they were alleged to have violated the federal law against obscenity. The concerns were declared frauds by the government and put out of business in 1904. Later, Hayes brought into existence the "Interstate Remedy Company," another "weak-men-cure" outfit. This was exposed in detail in THE JOURNAL in October, 1911, and in April, 1914, the government issued a fraud

order against the Interstate Remedy Company. Later, indictments were returned against Hayes, who was arrested in June, 1914, and pleaded guilty and received a fine of $5,000. In addition, the concern had to turn over to the government to be destroyed between seven and eight tons of an elaborate system of card index files, containing more than 500,000 names of "suckers." This was converted into pulp.

Last February the Federal Trade Commission issued its complaint against the Raladam Company and, since that time, has held hearings in Chicago, Detroit and Washington, D. C. Marmola, according to the exploiters, has essentially the following composition:

Desiccated thyroid	½ grain
Extract of bladderwrack (Fucus vesiculosus)	1 grain
Extract of phytolacca	½ grain
Extract of cascara sagrada	¼ grain
Phenolphthalein	¼ grain

Reports have come in to THE JOURNAL at various times of the harmful effects that have followed the indiscriminate use of Marmola, the symptoms being those of thyroid intoxication. This is not to be wondered at, when it is known that the instructions for the use of Marmola result in two grains of desiccated thyroid being taken daily by women who are wholly ignorant of the potency of thyroid and who naturally assume that products sold for self-medication are quite safe to use. For the government, Drs. Charles A. Elliott, Solomon Strouse and Rollin T. Woodyatt testified at the first Chicago hearing as to the effects that were likely to follow the use of Marmola by the laity. Each of these three men offered, in the interests of the public health, to testify (and did testify), each of them spending practically a half day to put himself at the service of the government in this matter. Not one of these three men charged the government a cent for his valuable services; they donated both their time and their special knowledge.

Some weeks later a second Chicago hearing was held, at which time Edward D. Hayes had expert witnesses to testify, in effect, that Marmola was a scientific (!) preparation and that it was harmless when used according to directions. The men that testified to this effect were:

ROBERT W. KEETON, M.D., Chicago.
ALONZO C. TENNEY, M.D., Chicago.
FRANK L. STONE, M.D., Chicago.
GEORGE W. FUNCK, M.D., Chicago.
HAROLD S. HULBERT, M.D., Chicago.
SAMUEL F. HAVERSTOCK, M.D., Detroit.

Each of these men is a member of his local medical society and, through that, has qualified as a Fellow of the American Medical Association. Here, then, is a sweet spectacle: the American Medical Association attempting to protect the public against quack remedies, while individual members testify in behalf of the exploiters of quack remedies!

Current Comment

TREATMENT OF TYPHOID BY SO-CALLED DETOXICATED VACCINE

Treatment of such conditions as typhoid, in which the bacteriologic and sanitary factors are well known, is sometimes considered as a closed book. General management of patients, diet, and hydrotherapy have long come into their own in the treatment of this disease. Hydrotherapy, internal and external, has no doubt been largely instrumental in reducing the case fatality rate. But when the death rate is still as high as 12.9 per hundred thousand in Birmingham, Ala., and 16.0 in Nashville, Tenn.,[1] there is no need for the physician or research worker to flag in his efforts for improved methods of treatment. Medicinal treatment, which was so abused by the overuse of antipyretic drugs, is giving place to more direct attack by chemotherapy and blood transfusion.[2] Mercurochrome-220 soluble given intravenously in typhoid has been reported on favorably from such widely different sources as China [3] and Missouri.[4] Conservatism in the acceptance of novel methods has been preached till it is hardly necessary to fear their uncritical acceptance. Vaccine prophylaxis has obtained wide use and has been generally accepted for its value in the prevention of typhoid. Vaccines have been used therapeutically for years with widely varying results. The rationale of such use during the acute stage of an illness has been rightly questioned, and adoption of this method has been kept in abeyance. Whether the favorable results reported have been due to a specific immunizing action of the vaccine or to a "nonspecific protein reaction" it is not possible to say. Recently, Wherry, Le Blanc, Foshay and Thomas [5] have applied the formaldehyde detoxication principle elaborated by Ramon to typhoid vaccine in the treatment of twenty-eight cases of typhoid. The method consists in incubating cultures of the typhoid bacillus with formaldehyde in such a manner that the toxic principle is destroyed while the antigenic properties remain, and is similar in principle to diphtheria toxoid (which has been admitted to New and Nonofficial Remedies).[6] Treatment was begun as soon as the diagnosis was established. The dosage given varied from 82,000,000 to 160,000,000 formaldehyde-treated bacilli in daily subcutaneous injections for a week or ten days. As the number of cases was too small to justify mortality statistics (although there were no deaths in this group), the authors consider the value of this detoxicated vaccine from the point of view of the number of complications and reduction in the period of morbidity. The average duration of fever was apparently materially shortened. Comparison with a group of patients not treated with this vaccine indicates that both in the length of illness and in the frequency of complications the patients treated with vaccines did

1. Typhoid in the Large Cities of the United States in 1927, J. A. M. A. **90:** 1624 (May 19) 1928.
2. Magill, W. S.: M. J. & Rec. **126:** 546 (Nov. 2) 1927.
3. Morris, H. H.: China M. J. **42:** 368 (May) 1928.
4. Saunders, E. W.: J. Missouri M. A. **24:** 138 (April) 1927.
5. Wherry, W. B.; Le Blanc, T. J.; Foshay, Lee; and Thomas, R.: Treatment of Typhoid Fever with Detoxicated Vaccine, J. Infect. Dis. **43:** 189 (Sept.) 1928.
6. New and Nonofficial Remedies, J. A. M. A. **91:** 321 (Aug. 4) 1928.

better. The difficulty in obtaining a sufficiently large group of patients makes it imperative to repeat this treatment under various conditions before conclusions can be definitely drawn.

CHOLECYSTOKININ—THE GALLBLADDER HORMONE

Not long ago, in a discussion of the much debated topic of the movement of the bile, readers of THE JOURNAL were reminded that the last word on the function of the biliary passages has not yet been spoken.[1] Fortunately for the progress of the physiologic sciences and their applications to medical gastro-intestinal problems, experimental progress in the field of the study of biliary function, which seemed to stagnate for many years, has of late experienced a new development. Much more is known today regarding the functions of the gallbladder and the behavior of the bile in the biliary passages. New technics of investigation have helped to bring this about. The problems of surgeons as well as of gastro-enterologists have stimulated physiologic workers. One of the apparently significant contributions of the consequent renaissance of biliary knowledge has been the demonstration by Ivy and Oldberg[2] of the Northwestern University Medical School in Chicago that a hormone mechanism is concerned in gallbladder contraction and evacuation. In the past quarter century chemical control of secretion through humoral paths has been definitely established. The pancreatic secretion and the flow of bile are augmented when "secretin" passes into the blood stream. Now the existence of "cholecystokinin," a chemical substance that excites the gallbladder to movement, is postulated. It is probably different from pancreatic secretin, but, like the latter, it is generated in connection with the upper intestinal mucosa. When acid is injected into the duodenum, something gets into the blood which causes the gallbladder to contract. This by no means excludes other mechanisms for gallbladder evacuation. Ivy and Oldberg's observations have been beautifully supplemented through the outcome of so-called cross-circulation experiments in which the introduction of acid into the duodenum of the "first" animal caused something to enter the blood, which passed by means of the cross-circulation cannula to the "second" animal, causing the gallbladder of the "second" animal to contract. According to the Chicago physiologists, whether or not the gallbladder contraction leads to evacuation of the gallbladder depends on the amount of resistance of the sphincter or intramural portion of the common duct. If the duodenum were spastic, it is quite likely that the gallbladder would not evacuate even though caused to contract by "cholecystokinin." This may explain some of the reports of negative results observed after the introduction of acid into the duodenum of man. The acknowledged promotion of gallbladder discharge after certain types of meals is in no way at variance with the hypothesis of hormone control.

1. The Movements of the Bile, editorial, J. A. M. A. **90**: 294 (Jan. 28) 1928.
2. Ivy, A. C., and Oldberg, Erie: A Hormone Mechanism for Gallbladder Contraction and Evacuation, Am. J. Physiol. **86**: 599 (Oct.) 1928.

Association News

MEDICAL BROADCAST FOR THE WEEK

A. M. A. Morning Health Talks and Evening Health Hints from *Hygeia*

The American Medical Association broadcasts daily at 10 o'clock in the morning, central standard time, over station WBBM (770 kilocycles, or 389.4 meters).

The program for the week of November 5 to November 10:

November 5. "Sleep," by Dr. Morris Fishbein, editor of THE JOURNAL and of *Hygeia*.
November 6. "Music in the Treatment of the Sick by American Indians," and "Some Health Sinners," by Dr. R. G. Leland, assistant director of the Bureau of Health and Public Instruction and Association announcer.
November 7. "Around the Clock with Baby," by Dr. R. G. Leland.
November 8. "Medical News," by Dr. J. F. Hammond, news editor of THE JOURNAL.
November 9. "Fooling the Fat," by Dr. Arthur J. Cramp, director of the Bureau of Investigation.
November 10. "First Aid to Medical Terms," by Dr. R. G. Leland.

Evening Health Hints from *Hygeia* at 8 o'Clock, Central Standard Time

November 5. Mark Twain on "Man."
November 6. Do You Live in a Health House?
November 7. Is Your Child a Mouth Breather?
November 8. The Sanitary Manicure.
November 9. The League of Nations Defines Rights of the Child.
November 10. Taking Care of the Skin.

Next week's program will appear in this place in the next issue of THE JOURNAL.

TO PORTLAND BY AIRPLANE

Possibility of Securing Special Accommodations for Trip to Annual Session

Because of the place of the Annual Session for 1929, it has been suggested that many physicians might care to make the trip by airplane. If a sufficient number are interested, it is possible that special rates and accommodations may be obtained. Those who contemplate going to Portland and who might be interested in this method of transportation will confer a favor by writing to the headquarters office so that negotiations may be begun with the transportation lines.

THE PORTLAND SESSION

Program of the Section on Dermatology and Syphilology

The time has arrived for the submission of titles and abstracts of papers for the program of the Section on Dermatology and Syphilology at the Portland Session of the American Medical Association. The executive committee is most anxious that those who have not before appeared on the program be given an opportunity. Original investigations are desirable. The title should be accompanied by an abstract of not more than 150 words. On receipt, titles and abstracts will be referred to the executive committee for selection and authors will be notified of its action as soon as possible.

W. H. GUY, Secretary,
7026 Jenkins Arcade, Pittsburgh.

Major Postoperative Care.—The great need after operation is water, but certain solutions are indicated under varying conditions. Thus, in cases of partial or complete bowel obstruction, the postoperative fluid should be hypertonic salt solution given by vein to correct the diminished chlorine content of the blood. In cases of acidosis following prolonged vomiting or starvation, the fluid given after operation should be glucose in appropriate percentages. After thyroidectomy for exophthalmic goiter, Lugol's solution in the intravenous or rectal fluid helps to counteract the wave of thyrotoxicosis that follows operation. The great need is fluid, but the fluid should be selected for the individual case in its mode of administration, its quality, and quantity.—Kerr, H. H.: Postoperative Care, *Virginia M. Monthly*, September, 1928.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Anniversary of Societies.—About 100 physicians, seventy-five of whom were from out of town, attended clinics at Fort Smith hospitals, September 19, commemorating the twenty-fifth anniversary of the Tenth Councilor District Medical Society and the fifty-fourth anniversary of the Sebastian County Medical Society. The afternoon was devoted to papers, among the subjects of which were "The Heart," Dr. Drew W. Luten, St. Louis; "Congenital Syphilis," Dr. Charles C. Dennie, Kansas City, and "Birth Injuries," Dr. Patrick Murphey, Little Rock. At the banquet the principal address was given by Dr. George E. Knappenberger, Kansas City. The toastmaster was Dr. James A. Foltz, Fort Smith.

CALIFORNIA

Personal.—Dr. Herlwyn R. Green has been appointed instructor in anatomy at Stanford University; Dr. Robert G. Craig, instructor in obstetrics; Dr. Gunther W. Nagel, clinical instructor in surgery, and Dr. A. G. Rawlins, a clinical instructor.

Stanford Offers Site for Municipal Hospital.—The city council of Palo Alto at a special meeting, October 16, accepted the offer of Stanford University of a site for a municipal hospital which will cost about $350,000. According to the San Francisco *Chronicle*, the university offered a ninety-nine year lease on a 10 acre tract adjoining Stanford's arboretum, and offered to operate the new hospital on a contract similar to that under which it conducts the present Palo Alto Hospital.

Record Production of Butter Fat.—According to the University of California news service, a Holstein cow has completed a twelve months' test at the college of agriculture of the university, during which time she made an official record of producing 27,674.9 pounds of milk, containing 1,000.56 pounds of butter fat. The cow was bred, raised and tested at the university farm and is the one hundred and twenty-eighth of the breed to achieve the record of 1,000 pounds of butter fat, which is said to be equivalent to 1,250 pounds of butter. Imperial Mead Juliana DeKol went on test at the age of 5 years and 10 months.

Society News.—Dr. Dudley A. Smith, San Francisco, read a paper on "Cancer of the Rectum" before the Contra Costa Medical Society, September 15.——The Orange County Medical Society was addressed, September 4, at the county hospital by Dr. Merrill W. Hollingsworth, Santa Ana, on "The History of Syphilis"; a collection of rare old volumes was exhibited and pictures of original writings were shown on the screen. ——The San Diego County Medical Society was addressed, October 2, by the city and county health officer, Dr. Alexander M. Lesem, in regard to the proposed sewage disposal plant of El Cajon. The society protested vigorously against the issuance of a permit for a sewage disposal plant which would pollute the waters of the San Diego River, which constitutes the potential water supply of the city of San Diego.——The semiannual alumni day of the University of California Medical School will be observed in San Francisco, November 23; the program will include clinics, demonstrations, ward rounds and exhibits.——At the quarterly meeting of the state board of medical examiners, Sacramento, October 15, Drs. Percy T. Phillips, Santa Cruz, was reelected president; William R. Molony, Los Angeles, reelected vice president, and Dr. Charles B. Pinkham, San Francisco, reelected secretary.——Dr. Charles L. Ireland, Columbus, Ohio, addressed the Pacific Physiotherapy Association, Los Angeles, October 29, on "The Electrotherapeutic Spectrum."

COLORADO

License Revoked.—The state board of medical examiners at a meeting, October 2, revoked the license to practice in the state of Dr. Walter H. Bailey, Denver, on account of unprofessional and dishonorable conduct.

CONNECTICUT

Personal.—Dr. William H. O'Neil has been appointed health officer of Ansonia.——Dr. S. P. Taylor has been appointed health officer of North Branford to succeed Dr. I. E. Brainard.——Dr. Henry S. Turrill has been appointed health officer of Kent.——Dr. Arthur H. Perkins has been appointed assistant superintendent of the Waterbury Hospital, Waterbury.

Mosquito Elimination in New Haven.—The chamber of commerce of New Haven initiated a campaign to eliminate mosquitoes from that community and neighboring towns in 1927 and continued it through the summer of 1928. The work comprised the raising of funds and the draining of marsh land. A survey was first made by special inspectors over a three month period of breeding places of mosquitoes, with a classification of the mosquitoes found. An educational campaign was conducted to encourage the public to help in eliminating breeding places. The health department employed six inspectors to discover breeding places and demonstrate to the people on the premises how to destroy the eggs of mosquitoes and eliminate such breeding places. During the last summer, 199 breeding places were found in a territory covering 210 city blocks. Breeding places were found also in four marshes, eleven swamps, five ponds and four parks. Among 106 mosquitoes examined, ninety-three were of the fresh water variety and thirteen of the salt marsh variety. *Anopheles*, the malaria-bearing type, was found in several instances.

DISTRICT OF COLUMBIA

Colonel Garrison Appointed Consulting Librarian.—Lieut. Col. Fielding H. Garrison, U. S. Army Medical Corps, has been appointed consulting librarian of the Welch Medical Library of Johns Hopkins University School of Medicine, Baltimore, which is now under construction and in the interest of which Dr. William H. Welch recently returned from an extended tour of Europe. Colonel Garrison received his bachelor of arts degree from Johns Hopkins and his medical degree from Georgetown University. He has been for many years assistant librarian in the surgeon general's office and is the author of the well known "History of Medicine."

Personal.—Dr. William C. White, U. S. Public Health Service, has taken up his duties as chairman of the division of medical sciences of the National Research Council for the ensuing year, succeeding Dr. Howard T. Karsner, Western Reserve University School of Medicine, Cleveland. The vice chairman of the division is Dr. Ludvig Hektoen, Chicago.——The application for retirement of Rear Admiral Cary T. Grayson, after many years of service in the navy, has been approved by President Coolidge. Dr. Grayson was personal physician to President Wilson and served on the President's yacht *Mayflower* during the Roosevelt and Taft administrations.

IDAHO

Personal.—The home of Dr. Harmon A. Tremaine, Boise, was destroyed by fire, September 3.——Dr. Thurston W. Laraway has been appointed health officer of the village of Elk River.——Dr. Charles R. Scott has been elected president of the Rotary Club of Twin Falls.

ILLINOIS

Society News.—Dr. C. A. Dragstedt, Northwestern University Medical School, Chicago, addressed the Rock Island County Medical Society, October 16, on "Present Status of Knowledge Concerning the Suprarenals" and Dr. James H. Hutton, Chicago, on "Ovarian Insufficiency."——The St. Francis Hospital, Evanston, is constructing a 100 bed addition which will make its total capacity 300 beds. The new wing will house the children's department, additional operating rooms and large roentgen-ray department, and rooms for patients.

Chicago

Dr. Zaremba Expelled for Advertising.—At a meeting of the council of the Chicago Medical Society, October 9, the report of the ethical relations committee was received and, among other recommendations, it was voted that Dr. John E. Zaremba be expelled from membership on a charge of unethical conduct in having sent out a circular written in several languages. Dr. Zaremba failed to appear before the council.

Personal.—Dr. Clarence O. Sappington has been appointed the first director of the newly created division of industrial health of the National Safety Council, Chicago.——After a visit to Chicago this summer, Dr. and Mrs. Frank Allport have returned to Nice, France, to live.——Charles M. Child, Ph.D.,

University of Chicago, gave an address at the dedication of the Shanklin Laboratory of Zoology at Wesleyan University, October 12, on "The Individual as a Biological Problem."——Dr. Edwin R. Le Count, professor of pathology, Rush Medical College, addressed the section on pathology of the Buffalo Academy of Medicine, Buffalo, October 31, on "Causes of Sudden Death."

Colonel Ashford to Speak on Sprue.—Col. Bailey K. Ashford, U. S. Army, retired, will address a joint meeting of the Institute of Medicine of Chicago and Northwestern University Medical School, November 15, at 303 East Chicago Avenue, on "Sprue and the Relation of Its Anemia to Pernicious Anemia." Col. Ashford has spent many years in tropical countries, particularly Porto Rico, where he did much clinical and research work on sprue. The institute of medicine will be addressed, November 16, by Dr. Lawrence J. Henderson, Harvard University Medical School, Boston, on "Comparative Studies of Blood as a Physicochemical System." This will be the ninth Pasteur lecture.

Society News.—Dr. Cleveland J. White addressed the Chicago Medical Society, October 24, on "Rôle of Fungi in Occupational Skin Diseases" and Dr. James G. Carr, Jr., "Cardiac Irregularities, Their Cause, Recognition and Treatment."——The Chicago Ophthalmological Society was addressed, October 22, by Dr. Percival Bailey on "Angiomatosis Retinae and Its Relation to Angiomatosis of the Central Nervous System."——Dr. Horace Newhart, associate professor of ophthalmology and otolaryngology, University of Minnesota Medical School, Minneapolis, will address the Chicago Laryngological and Otological Society at the Medical and Dental Arts Club, November 5, on "The Audiometers," and Dr. Robert Sonnenschein on "The Tuning Forks and Other Tests."——At the October 19 meeting of the Chicago Gynecological Society, Dr. William M. Thompson was elected president for the ensuing year; Drs. Carl H. Davis, Milwaukee, and Otto S. Pavlik, vice presidents; Dr. Sydney S. Schochet, secretary, and Dr. Charles B. Reed, treasurer.

Hospital News.—A sanatorium is to be erected in Jackson Park on the site of the old world's fair building, LaRabida, which burned several years ago. The institution will be known as the Jackson Park Sanatorium and Day Nursery. The building will conform in style with other South Park buildings.——The new St. Anne's Hospital building, 4900 Thomas Street, was dedicated, October 21.——Cook County will vote, November 6, on a proposed bond issue of $2,800,000 for a Cook County Hospital nurses' dormitory. The Illinois Training School Home for Nurses will be transferred to the University of Chicago in December, 1929, making it necessary to provide a new dormitory for the nursing requirements for the county hospital.——The facilities of the Municipal Contagious Disease Hospital are free to all who live in the city, and residents of other places who desire care in this hospital may obtain it for $25 a week. This charge is also made for Chicago citizens who desire private rooms, and their private physicians may attend them. Ward patients are under the care of the physicians of the staff.

Patient of Pasteur Attends Dedication of Monument.—At the unveiling of the monument to Pasteur in Grant Park, October 27, was William T. Lane, who was one of four children bitten by a rabid dog in Newark, N. J., about forty-four years ago. The other children were Patsy Joseph Reynolds, Eddie Ryan and Austin Fitzgerald. They were taken to France at the time Pasteur was doing his early work on rabies. An account of the journey is found on page 426 of the biography written by R. Vallery-Radot, published by Doubleday, Page and Company, 1927. "The four little Americans belonged to workmen's families and were sent to Paris by means of a public subscription opened in the columns of the New York *Herald;* they were accompanied by a doctor and by the mother of the youngest of them, a boy only 5 years old. . . . The children were received with enthusiasm on their return to New York and were asked many questions about the great man who had taken care of them." At the dedication of the monument Mr. Lane recalled that "everybody was sure we were going to die. There wasn't any question about the effectiveness of hydrophobia in those days. But Dr. O'Gorman of Newark had heard of a Frenchman and his cure. He spoke up. The people were ready to have a trial. A week after the bite we were on board a steamer. Crowds met us in Paris, followed us through the streets. A few people ran from us as if we were mad. The quiet man in the black skull cap looked us over, and supervised the injection of vaccine fourteen times on fourteen days. We were cured." The French ambassador, Paul Claudel, spoke at the unveiling, as did Vice President Charles G. Dawes, Dr. Frank Billings, chairman of the memorial committee which, since 1924, has carried forward the work of raising funds for the 20 foot marble shaft surmounted by a bust of Pasteur, and Dr. Ludvig Hektoen. The monument was accepted by Edward J. Kelly on behalf of the South Park Board of the city of Chicago.

INDIANA

Society News.—Dr. Ezra Vernon Hahn, Indianapolis, addressed the Seventh District Medical Society, Martinsville, October 30, on "Surgery in Treatment of Pulmonary Tuberculosis"; Dr. Otis B. Nesbit, Gary, "Diphtheria and Scarlet Fever Preventive Work," and Dr. McKendree C. Pitkin, Martinsville, "Diagnosis of Sciatic Pain." The evening session was addressed by Dr. Charles H. Nielson, St. Louis, on "Problem of the Nervous Patient." The president of the society, Dr. Thomas C. Hood, and the councilor, Dr. Everett E. Padgett, both of Indianapolis, gave addresses.

Ex-Presidents Honored.—At the annual banquet of the Indiana State Medical Association, Gary, September 27, a certificate of their official service to the society was presented to each ex-president. They were:

Charles S. Bond, Richmond, 1894
Miles F. Porter, Fort Wayne, 1895
William N. Wishard, Indianapolis, 1897
John C. Sexton, Rushville, 1898
John B. Berteling, South Bend, 1902
Charles H. McCully, Logansport, 1919
David Ross, Indianapolis, 1920
William R. Davidson, Evansville, 1921
Charles H. Good, Huntington, 1922.
Eldridge M. Shanklin, Hammond, 1924
Charles N. Combs, Terre Haute, 1925

The following are the ex-presidents who were unable to attend but for whom certificates were prepared:

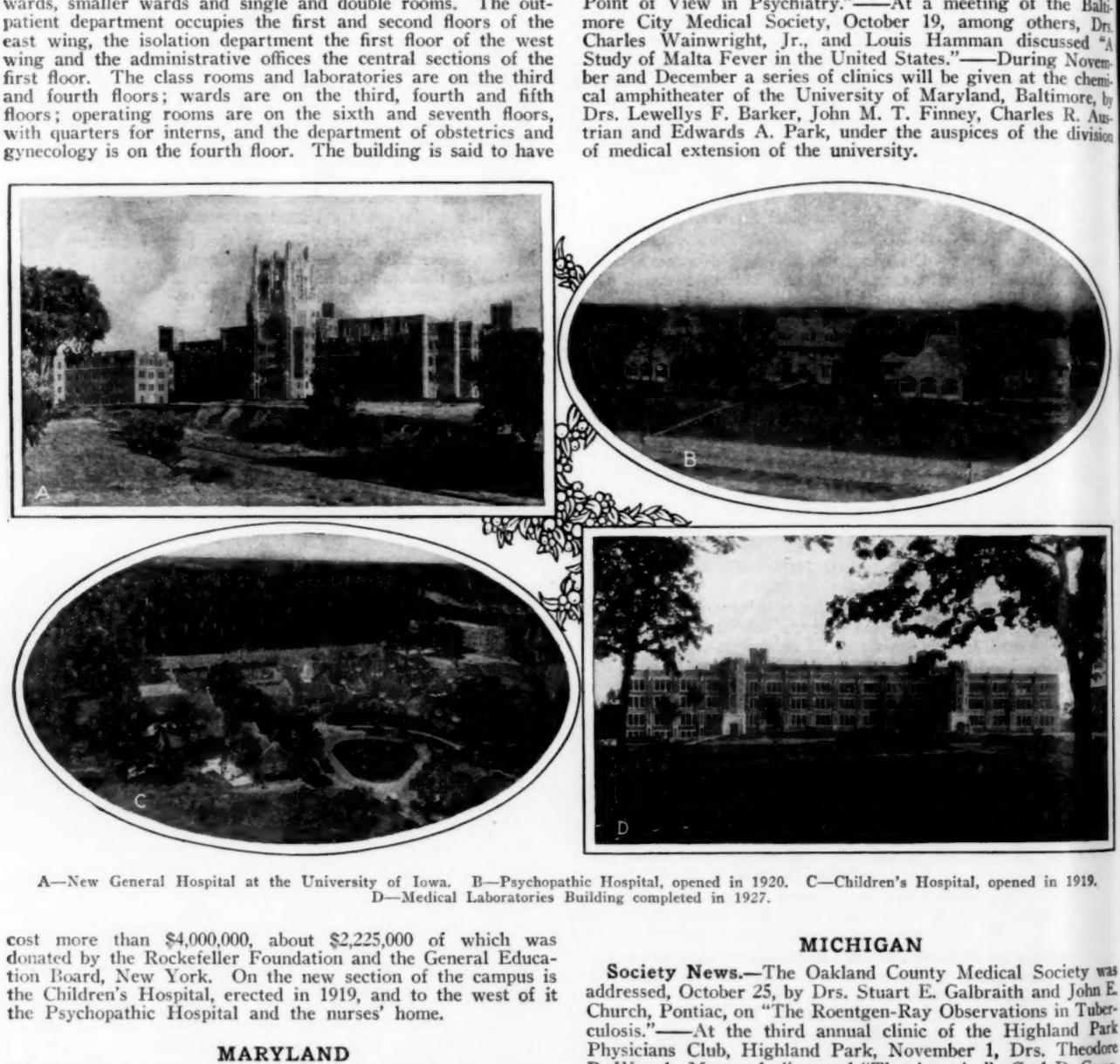
George F. Beasley, Lafayette, 1892
George W. McCaskey, Fort Wayne, 1900
George T. MacCoy, Columbus, 1904
William F. Howat, Hammond, 1911
Joseph R. Eastman, Indianapolis, 1917
William H. Stemm, North Vernon, 1918
Samuel E. Earp, Indianapolis, 1923
Frank W. Cregor, Indianapolis, 1926

IOWA

Society News.—Dr. Murdoch Bannister, Ottumwa, has been elected president of the Southeastern Iowa Medical Society for the ensuing year.——About 400 volumes from the library of the late Dr. George D. Darnall of West Union have been presented to the State University of Iowa College of Medicine in accordance with his will, among which are bound volumes of the *Transactions* and THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Dr. Darnall died in April, after having practiced medicine for about fifty-six years.——Dr. G. Henry Mundt, Chicago, addressed the Austin Flint-Cedar Valley Medical Society, Iowa Falls, October 23, on "Social Aspects of the Practice of Medicine."

Iowa Dedicates New Medical School and Hospital.—The State University of Iowa College of Medicine has been moved to a new campus on the bluffs on the west side of the Iowa River overlooking the Old Capitol Campus. The new medical laboratories and hospital college of medicine will be dedicated, November 15-17. The dedicatory address will be delivered by Dr. Ray Lyman Wilbur, president of Stanford University and formerly President of the American Medical Association, following which there will be an informal reception and in the evening a dinner. The ceremonies begin Thursday, November 15, with an inspection of the buildings. In the afternoon Drs. Waller S. Leathers, dean, Vanderbilt University School of Medicine, Nashville, Tenn., and Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, will speak on public health and surgery, and Alfred N. Richards, Sc.D., of the University of Pennsylvania School of Medicine, Philadelphia, and Dr. Campbell P. Howard, McGill University Faculty of Medicine, Montreal, on pharmacology and medicine. Following the dinner, Dr. William J. Mayo, Rochester, Minn., will give an address on "Looking Backward and Forward in Medical Education." The second day's program includes addresses by Drs. Frank C. Mann, Rochester, Minn., and Charles J. Rowan, Pasadena, Calif., on physiology and surgery, and by Drs. Herman L. Kretschmer and James B. Herrick, Chicago, on urology and medicine, followed by the address of dedication by Dr. Wilbur in the afternoon. On Saturday, George E. Vincent, Ph.D., president of the Rockefeller Foundation, New York, will speak on "The Doctor and the Changing Order," and Drs. George

H. Whipple, University of Rochester School of Medicine, and Joseph Brennemann, Chicago, pathology and pediatrics, respectively. In the afternoon the Iowa-Wisconsin football game will be played. The hospital is of limestone and brick, with a central tower 143 feet above the street level. There are accommodations for 750 patients, with twenty-bed wards, smaller wards and single and double rooms. The outpatient department occupies the first and second floors of the east wing, the isolation department the first floor of the west wing and the administrative offices the central sections of the first floor. The class rooms and laboratories are on the third and fourth floors; wards are on the third, fourth and fifth floors; operating rooms are on the sixth and seventh floors, with quarters for interns, and the department of obstetrics and gynecology is on the fourth floor. The building is said to have cost more than $4,000,000, about $2,225,000 of which was donated by the Rockefeller Foundation and the General Education Board, New York. On the new section of the campus is the Children's Hospital, erected in 1919, and to the west of it the Psychopathic Hospital and the nurses' home.



A—New General Hospital at the University of Iowa. B—Psychopathic Hospital, opened in 1920. C—Children's Hospital, opened in 1919. D—Medical Laboratories Building completed in 1927.

MARYLAND

Personal.—Sir Samuel Squire Sprigge, London, editor of *The Lancet*, recently visited Johns Hopkins University School of Medicine. Dr. Sprigge will visit eight universities in this country and two in Canada and will make a report on his return to England on medical education in the United States. ——Prof. Raymond Pearl of Johns Hopkins University, Baltimore, has been elected president of the International Union for the Study of Demographic Problems which was recently organized in Paris.

Society News.—The Medical and Chirurgical Faculty of Maryland held its semiannual meeting at Cambridge, October 25-26, where an oyster roast was held in the afternoon and later a reception. At the general meeting in the evening, Dr. Peregrine Wroth, Jr., Hagerstown, president of the faculty, spoke on "A Brief Note of Two Medical Organizations on the Eastern Shore of Maryland," and Dr. Howard A. Kelly, Baltimore, on "Dr. Luke of the Gospel." The president of the Dorchester County Medical Society, Dr. Edward Lankin, gave the opening address. Among others at the scientific session the following morning, Drs. Emil Novak, Baltimore, discussed early uterine cancer; Thomas B. Futcher, Baltimore, "Diabetes Insipidus in Relation to Lesions of the Pituitary Gland and Hypothalamus"; William J. Todd, Mount Washington, "The Doctor, the Countryside: An Economic Question"; Robert H. Riley, Baltimore, state health commissioner, "Present Status of Poliomyelitis in Maryland," and George H. Preston, Baltimore, state mental hygiene commissioner, "Effects of the Changing Point of View in Psychiatry."——At a meeting of the Baltimore City Medical Society, October 19, among others, Drs. Charles Wainwright, Jr., and Louis Hamman discussed "A Study of Malta Fever in the United States."——During November and December a series of clinics will be given at the chemical amphitheater of the University of Maryland, Baltimore, by Drs. Lewellys F. Barker, John M. T. Finney, Charles R. Austrian and Edwards A. Park, under the auspices of the division of medical extension of the university.

MICHIGAN

Society News.—The Oakland County Medical Society was addressed, October 25, by Drs. Stuart E. Galbraith and John E. Church, Pontiac, on "The Roentgen-Ray Observations in Tuberculosis."——At the third annual clinic of the Highland Park Physicians Club, Highland Park, November 1, Drs. Theodore R. Waugh, Montreal, discussed "The Anemias"; Carl D. Camp, Ann Arbor, "Indications for Various Kinds of Psychotherapy and Their Relative Effectiveness"; Henry J. Gerstenberger, Cleveland, "Demonstration of the Cinema as a Method of Record and Teaching in Pediatrics"; Robert L. Dixon, Wahjamega, "The Preconvulsive Stage of Epilepsy"; John R. Fraser, Montreal, Que., "Pelvic Inflammation"; Clarence L. Starr, Toronto, "Osteomyelitis"; Leon W. Martin, Chicago, "Some Obstetric Problems"; Louis J. Hirschman, Detroit, "The State Medical Society and the Doctor," and Gotthelf C. Huber, Ann Arbor, "Heredity from a Biologic Standpoint." The mayor of Highland Park, John C. Shields, also gave an address.

MISSISSIPPI

Society News.—Among others, Dr. A. Pettit addressed the Issaquena-Sharkey-Warren Counties Medical Society, Vicksburg, October 9, on "Cesarean Section versus Laparohysterectomy."——The state health officer, Dr. Felix J. Underwood, Jackson, has issued a warning to the public against pedlers of glasses who claim to be connected with the Mississippi State Commission for the Blind. The commission has not authorized

any one to sell or give away glasses in its name. It is understood that two or three persons have been traveling about the state imposing on persons with poor sight.——Dr. William H. Frizell, Brookhaven, addressed the Homochitto Valley Medical Society, October 11, at Natchez on medical organization and cooperation among physicians; Dr. Alphonse H. Meyer, Memphis, Tenn., read a paper on "Fracture of the Femur in the Aged."

NEW HAMPSHIRE

Decrease in Death Rate.—The death rate for New Hampshire for 1927 was 1,391 per hundred thousand of population, as compared with 1,476 in 1926. According to the U. S. Department of Commerce, the decrease was due to decreases in the rates from pneumonia, influenza, bronchitis, measles, tuberculosis, enteritis and cirrhosis of the liver. There were increases, however, in the death rates from heart disease and diabetes. The estimated population of the state for 1927 was 455,000.

NEW YORK

Health at Yonkers.—Telegraphic reports to the U. S. Department of Commerce from sixty-eight cities with a total population of about 30 million, for the week ending October 20, indicate that the lowest mortality rate (7.3) was for Yonkers and that the mortality rate for the group of cities as a whole was 12.3. The mortality rate for Yonkers for the corresponding week last year was 9.2 and for the group of cities, 11.4.

Eleven Typhoid Deaths—Olean Starts Investigation.—At a meeting of the council of Olean, in Cattaraugus County, October 13, the committee of prominent citizens and city officials, appointed to conduct an investigation of the typhoid epidemic, requested that the state health commissioner, Dr. Matthias Nicoll, Jr., be called in to assist. The epidemic, October 24, it is reported, amounted to 211 positive cases and eleven deaths. The situation had improved somewhat, as on that day only three new cases had developed. The investigating committee was made up of the mayor, Mr. Pierce; the president of the council, Mr. Jaekle; the city attorney, Mr. Andrews, and Messrs. William A. Dusenbury, Mark M. Holmes and Albert E. Ewing. Nearly 6,000 persons in the community are said to have been inoculated with typhoid vaccine since the epidemic began.

Generations of Physicians.—The *New York State Journal of Medicine* notes another "three generations of doctors." Dr. Walter D. Ludlum, Brooklyn, is the son of Dr. Charles H. Ludlum, a member of the Nassau County Medical Society, who, since 1878, has practiced at Hempstead. The son, Walter D., has practiced in Brooklyn since his graduation. Walter D. Ludlum, Jr., recently graduated from Columbia and is now an intern in a New York hospital. Another case is reported of the family of Dr. Charles P. McCabe of Greenville, some member of which has been in the active practice of medicine in that city for 127 years. The first physician member of the family was Dr. Amos Botsford, who began practicing in Greenville in 1801. A son, Gideon Botsford, graduated from Fairfield Medical College in 1832 and practiced in Greenville with his father. A daughter married Dr. Bradley S. McCabe and their second son, Charles P. McCabe, still practices in Greenville. He was in 1925 president of the Third District Branch Medical Society.

New York City

Typhoid in Greenwich Village.—The outbreak of typhoid in the Greenwich Village area, noted recently in THE JOURNAL, amounted to fifty-eight cases, October 19, it is reported, many of which have been traced to a typhoid carrier. Four deaths had been reported up to October 12.

Society News.—The time of the practical lectures for general practitioners given by the academy of medicine on Fridays has been changed from 5 to 4:30 o'clock. The third series began November 2 and will continue until April 12. Dr. John E. MacKenty will lecture, November 9, on "Carcinoma of the Larynx" and Dr. John L. Kantor, the following Friday, on common disorders of the colon.

Dr. Peck Appointed Deputy Commissioner.—Dr. Herman T. Peck, Brooklyn, was sworn in as deputy commissioner of health of New York City, October 24. Dr. Peck is a graduate of Long Island College Medical School and was appointed to the city health service in 1899, since which time he has served as vaccinator, medical school inspector, antitoxin inspector, at the tuberculosis clinic and, following a civil service examination in 1917, as assistant sanitary superintendent in charge of Brooklyn. Last February he was appointed general medical director of the department.

Health Association Finds Need for Dental Clinics.—The 152 dental clinics in Greater New York City, excluding those maintained by industries for their employees only, are not sufficient to care for the needs of those who are entitled to free service or service at a moderate cost, according to a study made by the New York Tuberculosis and Health Association. During the last five years, fifty-six new dental clinics have been established in New York, most of them in Manhattan, although the trend of the population is to the other boroughs. The fees at these clinics vary from no charge in twenty-three of them to $1.50 at one clinic. There is, however, a common admission fee of 25 cents. Few of the clinics approach self-support. The cost of dental care in them, exclusive of all plant costs such as heat, light, rent and equipment, is estimated at between $3 and $3.50 an hour. If more money were available for dentists and others on the staff, the clinical service could be doubled without new equipment as, at present, the equipment is used only sixteen hours a week. The Committee on Community Dental Service of the New York Tuberculosis and Health Association is planning a program for the winter in view of the report of this study, and is working on a recommendation that there be evolved a city-wide plan for the development of adequate dental clinic facilities, with special emphasis on clinics for children from 2 to 16 years of age.

"Bunk" in Public Health Work.—Too much emphasis has been placed on "the selling of the idea of public health and not enough on actually delivering the goods" in recent years, according to Dr. Shirley W. Wynne, health commissioner, in an address before a meeting of the New York State Nurses' Association, the New York League of Nursing Education and the New York State Organization for Public Health Nurses, October 23, as reported in the New York *Times*. In explaining his position, Dr. Wynne estimated that only about 12 per cent of the persons who had come in contact with cases of diphtheria had been immunized against diphtheria and that, although there is a dependable antitoxin for diphtheria, last year in New York there were 715 deaths among 13,500 cases. He believes that a great part of the reduction in the number of tuberculosis cases comes solely from the improvement in economic conditions and only a small part from public health work. Dr. Wynne is of the opinion that there has been a considerable amount of "bunk" in public health work in the last ten years. He recommended a careful examination of all first grade school children with the report of their conditions to the home and family physicians and a follow-up of the doubtful cases. In the same way, more thorough work could be done if all new employees in industry were given a complete examination, with a follow-up in special cases.

Homes for the Aged.—There are eighty-two old folks' homes in or near New York City, exclusive of those caring only for the blind, deaf or incurables, according to the first annual report of the Central Information Bureau for the Care of Aged. The capacity of these homes for old folks is 13,300 beds, of which 5,300 are in public homes, and 8,000 in private homes. Of the total 81 per cent, or 10,700 beds, are in free homes; 2,400 beds are in homes requiring entrance fees, and about 1 per cent are in homes requiring monthly payments. According to the report, there is a scarcity of beds for old folks, and there are waiting lists. The first year's experience of the Central Information Bureau for the Care of Aged is interesting. Of 357 persons who sought information concerning admission, 106 were between 75 and 95 years old and 176 from 65 to 75. The majority were American born, forty were German born, twenty were born in England, nineteen in Ireland, and the rest represented nineteen other nationalities. The number of women seeking admission was more than twice that of the men. Seventeen religious faiths were represented among the applicants. Of the 205 old ladies seeking admission, eighty-seven were listed as housewives and thirteen as teachers; other occupations were those of actress, author and boarding house keeper, cashier, cook and Christian Science healer, dancer and dressmaker, matron and milliner, saleswomen, silk weaver and concert singer. Among the men, sixty-eight occupations were represented, among which were those of dentist, doorman, editor, expressman, harness maker, head waiter, laborer, lawyer, mechanic, musician, pedler, physician, printer and stock exchange broker. There is an urgent need in New York for more homes for the helpless aged. Every day sees some aged person suddenly deprived of his sole support; it may be by the accidental death of a son or daughter. There is a combined waiting list of 1,700 in twenty-one homes, and if their experience is characteristic of the seventy-seven private old folks' homes in the metropolitan area, there are more than 6,000 aged persons waiting to be admitted. However, there are a number of vacant beds in homes to which admission is restricted, according to religious faith, membership in some order, occupation, place of residence or payment of a large fee. The Central

Information Bureau for the Care of Aged is one of the fifty projects of the welfare council's program for improving social work in the city. It does not place old folks in homes but gives information concerning all the institutions to which they might be eligible. The address is 151 Fifth Avenue.

NORTH CAROLINA

Society News.—About 128 persons attended the October 8 meeting of the Seventh District Medical Society at Lincolnton. Among the speakers at the banquet were Dr. Thurman D. Kitchin, Wake Forest, and Wilburt C. Davison, dean of the Duke University Medical School, Durham. Drs. Roy B. McKnight, Charlotte, spoke on "Factors of Safety in Spinal Anesthesia"; Thomas B. Mitchell, Charlotte, "Thyrotoxicosis as a Complication of Pregnancy," and Archibald A. Barron, Charlotte, acute infections of the brain. Dr. John R. Gamble, Lincolnton, was elected president. The next meeting will be in Charlotte in October, 1929.

OHIO

Milk Dealer Charges Boycott.—A milk dealer of Norton township has filed suit against a milk company of Kenmore, it is reported, as a result of its refusal to accept milk from him because he did not sign a petition providing for tuberculin testing of his cows. The plaintiff alleges that he had a contract to sell milk to the defendant and that on April 1, 1927, the company refused to accept his milk, which he claimed was produced under sanitary conditions and according to the state law. He was forced then to find a market in Cleveland and Columbus, from which places his milk eventually was excluded also. He then installed a pasteurization plant and disposed of his products at retail until the remainder of the contract expired. He alleges that the tuberculin test in cattle is unreliable, and asks $12,000 damages as a result of his loss of business.

Noguchi Memorial Meeting in Cincinnati.—A memorial meeting in memory of the late Dr. Hideyo Noguchi will be held in Cincinnati, November 18, sponsored by a committee representing the academy of medicine, the University of Cincinnati College of Medicine and the Public Health Federation. An address will be given by Dr. Frank Billings of Chicago, formerly President of the American Medical Association, on "The Significance of Noguchi's Work to the World." Many invitations have been extended throughout the country. The meeting will be open to the public. The mayor of Cincinnati is expected to preside, the counselor of the Japanese embassy will represent Japan, and Miss Hizi Koyke, Japanese grand opera star, will sing. The acting president of the University of Cincinnati has recommended to the trustees that a posthumous degree be conferred on Noguchi on this occasion.

Licenses Suspended for Association with Illegal Practitioners.—The Ohio State Medical Board recently suspended the license of Dr. W. E. Hatch, Toledo, for ninety days, according to the *Ohio State Medical Journal*, on the grounds of lending his name and associating himself with an illegal practitioner of medicine. Dr. Hatch, it appears, had been associated with the "Medical Clinic," which was owned by Lee Baron, an illegal practitioner. Baron had pleaded guilty in court to conducting an office without a certificate and been fined $500 some time ago. The license of Dr. James W. Salisbury, Toledo, was suspended by the board for thirty days on evidence to the effect that he associated himself with the "Toledo Research Laboratory," which was operated by G. R. Ensminger, an unlicensed practitioner. Ensminger had pleaded guilty in court to conducting an office without a certificate and was fined $250, which fine was suspended on good behavior. He was also arrested at another time on a charge of practicing medicine without a license.

Mothers Older than Forty-Five.—The division of vital statistics of the state health department has prepared a summary of Ohio deaths and births for three years. During last year, 48.2 per cent of the 73,466 deaths reported were due to five causes: heart disease, cancer, nephritis, pneumonia and tuberculosis. In 1926, these diseases were responsible for 46.4 per cent of all deaths. More deaths occurred in March and fewer in August than any other months of the year. The mortality rate for the state for 1927 was 11.25, as compared with 12.24 for 1926. The city having the highest death rate without a state institution was Delaware, with 20.4, and the lowest rate for any city was 4.5 for Kenmore. The county having the highest rate without a state institution was Muskingum, with 15.5. Carroll County was the lowest with a rate of 8.1. The birth rate for 1927 was 18.9 as compared with 19.3 in 1926. There were 123,425 births recorded during the year. Sciota County had the highest birth rate with 29.1 and Highland County the lowest, 11.2. The city having the highest birth rate, 31.8, was Painesville. There were 398 children born to mothers 15 years of age or younger, and 212 children born to mothers 45 years of age or over. One mother native of the United States gave birth to her twentieth child and one mother, native of Italy, to her twenty-first child.

Drive Against Illegal Practitioners in Toledo.—The Ohio State Medical Board reports, among others, the following convictions for violation of the medical practice act in Toledo:

D. F. Thompson, municipal court, pleaded guilty to practice without a certificate. Fined $25 and costs.
E. P. Linderme, municipal court, found guilty, October 17. Fined $25 and costs.
S. M. Spivack pleaded guilty in municipal court for practicing as a masseuse. Fined $25. Suspended on promise to quit.
J. P. O'Neil, unlicensed chiropractor, found guilty of advertising and announcing. Fined $100 and costs.
Bertha N. Rank found guilty in municipal court, same offense. Fined $100 and costs.
R. T. Smith, municipal court, found guilty of advertising and announcing. Fined $100 and costs.
D. R. McLain found guilty in municipal court for advertising and announcing. Fined $100 and costs.
Leota M. Gurden, municipal court, found guilty of advertising and announcing. Fined $100 and costs.
Robert L. Morrison, municipal court, found guilty of advertising and announcing without certificate. Fined $100 and costs.
James D. Method, municipal court, found guilty of advertising and announcing without certificate. Fined $100 and costs.
K. T. Mueller, municipal court, pleaded guilty to same offense as above. Fined $25 and costs. Suspended on agreement to quit.
J. R. Sosbe, municipal court, pleaded guilty to same offense as above. Fined $100 and costs. Suspended $50 on promise to quit.
A. G. Hurlburt, same offense, same court, fined $100 and costs.
H. A. Rutschow, same offense, same court. Fined $100.
S. E. Siford, same offense, same court. Found guilty and fined $100 and costs.
Dorothy Pfund, same offense, same court. Fined $100 and costs. Others reported convicted were Grace L. Moore, Bessie McFarland, O. A. Knisely, E. J. Schreiber, L. D. Schwanzel, E. Bossler, William Binder, C. R. Hubbard, W. J. Rinehart, H. E. Hughes, A. A. Hartsog, C. F. Zollinger, W. D. Rinehart, W. A. Coutchers, B. A. Snyder, Maude Snyder.

Where $100 was assessed $50 was suspended provided individuals ceased practice. In addition to these practitioners, several others were placed under arrest in Toledo.

PENNSYLVANIA

State Medical Election.—At the seventy-eighth annual meeting of the Medical Society of the State of Pennsylvania, Allentown, October 3, Dr. Thomas G. Simonton, Pittsburgh, was made president; Dr. William T. Sharpless, West Chester, president elect; Drs. Thomas H. Weaber, Allentown, George E. Holtzapple, York, Christian Gruhler, Shenandoah, and Theodore P. Simpson, Beaver Falls, vice presidents; Dr. Walter F. Donaldson, Pittsburgh, secretary; Dr. Christian B. Longenecker, Philadelphia, assistant secretary, and Dr. John B. Lowman, Johnstown, treasurer. The next annual meeting will be at Erie.

Society News.—The Pittsburgh Academy of Medicine was addressed, October 23, by Drs. Glenn H. Davison on "Acute Pyelitis"; James N. Stanton, "Acute Pelvic Peritonitis," and Nelson P. Davis, "Acute Appendicitis."——The Bucks County Medical Society will celebrate its eightieth anniversary, November 14, at the Doylestown Country Club. An unusual program is being arranged.——It is reported that the late John Bindley, steel manufacturer, left in trust $100,000 for a study of occupational diseases which will be undertaken by the University of Pittsburgh.——Dr. Benjamin Rush Field has resigned as superintendent of the Easton Hospital, Easton.——Dr. Morris H. Kahn, New York, will address the Lackawanna County Medical Society, November 13, at Scranton, on "Industrial Aspects of Heart Disease."

Philadelphia

Druggists Offer Cooperation.—At a meeting of the Philadelphia Association of Retail Druggists, October 5, the following resolution was adopted:

That the Philadelphia Association of Retail Druggists pledge themselves to cooperate with the Pennsylvania county and state medical authorities to further legislation to control the practice of medicine, making it a specific requirement that any one undertaking to practice medicine must have the fundamental education as required by our leading medical colleges.

Military Night.—In connection with the Armistice Day celebration, the Philadelphia County Medical Society will hold a dinner, November 13, at the society's building, for which a charge of $3 has been tentatively fixed. The occasion will be of special interest to those who served in the medical departments of the army and navy during the World War and other wars. Every member of the society is cordially invited to attend.

Survey of Public Health Facilities.—Dr. Haven Emerson, professor of public health administration, Columbia University College of Physicians and Surgeons, New York, conferred, October 23, with a committee appointed by the Philadelphia Chamber of Commerce regarding a six months' survey to be made of the facilities for hospitalization and public health work in Philadelphia. Dr. Emerson requests the cooperation of the physicians, hospital officials and others familiar with this field. The undertaking is similar to surveys which have been conducted in Cleveland, Cincinnati and San Francisco.

Society News.—The Philadelphia Neurological Society was addressed, October 26, by Drs. Walter S. Freeman and Paul T. Crosby of the U. S. Navy on "Reflex Grasping and Groping, Its Significance in Cerebral Localization" with motion pictures; by Drs. Bernard J. Alpers and H. D. Palmer on "Neurologic Complications of Pregnancy and the Puerperium," and by Dr. Douglas P. Murphy on "Effects of X-Ray in Radium on the Pregnant Uterus and Embryo."——In their fight to prevent the pollution of the Schuylkill River, the city and state won a victory, October 18, when a decree was handed down in common pleas court at Norristown forbidding the Coopers Creek Chemical Company to allow any taste-producing substances to enter the river and its tributaries except such substances as the company is unable to control.——Prof. Alfred Gysi, Zurich, Switzerland, gave an illustrated lecture before the Academy of Stomatology of Philadelphia, October 23, on "Practical Conclusions from Scientific Research in Denture Construction."——Dr. Bernard P. Widmann has been appointed chief of the radiologic bureau of the Philadelphia General Hospital.——The Philadelphia County Medical Society will hold a joint meeting with the Obstetrical Society of Philadelphia, November 14, 8:30 p. m., preceded by a subscription dinner to the guests. Dr. Arthur H. Bill, professor of obstetrics, Western Reserve University School of Medicine, Cleveland, will give an address on "Use and Abuse of Forceps," and Dr. Barton C. Hirst on "Cases That Overlap the Borderline Between Gynecology and Other Departments of Medicine." Special clinics will be held during the day.——Dr. David R. Bowen gave an exhibition, November 1, of moving picture films of the International Radiological Congress in Stockholm before the Philadelphia Roentgen Ray Society.

TENNESSEE

Society News.—Dr. Walter P. Gardiner, New Orleans, addressed the East Tennessee Medical Association at a banquet, October 25, on "Eclampsia," and Dr. Thomas H. Stewart, Jr., U. S. Army Medical Corps, on "Quinine in the Prophylaxis of Malaria." The Chattanooga and Hamilton County Medical Society was host.

Dr. Poll Gives Flexner Lectures.—The first series of lectures of the Abraham Flexner Lectureship, recently established at Vanderbilt University School of Medicine, Nashville, will be given over a period of about two months this fall by Dr. Heinrich Poll, director, Institute of Anatomy of the Faculty of the University of Hamburg, Germany. The subjects will be:

1. "Teaching Anatomy from the Viewpoint of Melistic Structure" (given October 25).
2. "Melistic Structures of Endocrine Functions, Demonstrated in the Histophysiology of Sexhormone."
3. "Melistic Structure of the Supra-Individual Being."
4. "Melistic Structure of the Germ Plasm, Demonstrated by Investigations on Twinning."
5. "The Theory of the Melos."

GENERAL

Infant Mortality Index.—Telegraphic reports to the U. S. Department of Commerce from sixty-eight cities with a total population of about thirty million, for the week ending October 20, indicate that the lowest infant mortality rate for that week was for Knoxville, Tenn., Spokane, Wash., Utica, N. Y., and Yonkers, N. Y., which reported no infant mortality.

Harvard Diploma Lost.—Dr. Marshall C. Balfour reports that in moving his personal effects from the state of Mississippi to New York City a box was broken in transit, and among the lost articles was his diploma from Harvard University Medical School. Any one finding the lost diploma may address Dr. Balfour at 61 Broadway, New York, room 2701.

Cytologist Wanted.—The U. S. Civil Service Commission announces that applications for the position of cytologist to fill the vacancy in the hygienic laboratory at the U. S. Public Health Service, Washington, D. C., must be on file with the commission not later than November 28. The entrance salary is $3,700 a year. The duties are to conduct under general supervision research on the growth of normal and malignant cells in vitro, to study the action of light on cells, to cooperate in radiometric studies and to carry on other research. Competitors will not be required to report for examination but will be rated on their education, training and experience.

News of Epidemics.—The first smallpox death in Summit County, Ohio, in eight years occurred near Barberton, October 13. Two cases of smallpox were found by the health department among the employees of a factory.——An outbreak of about fifty cases of measles was reported in the schools of Decatur, Ill., October 19.——About 100 cases of mumps were reported under quarantine in the vicinity of Warren, Pa., October 15.——The schools of Salem, Ind., were closed from October 16 to October 22 on account of an outbreak of scarlet fever.——Six cases of diphtheria among pupils of the North Vandergrift Public School (Pa.) necessitated its closing for an indefinite period.

Protest of Biochemists.—The executive committee of the Annual Conference of Biological Chemists has adopted a resolution protesting against the proposed decrease in the number of hours devoted to biochemistry in the curriculum of medical schools and proposing that the prerequisites in chemistry be more definitely prescribed and, if possible, include quantitative analysis. At the annual conference in Ann Arbor, the committee disapproved of the proposed decrease to 146 hours for the teaching of biochemistry, pointing out that many of the principal advances in medicine in the last twenty years were in the field of biochemistry and that "our best teachers of medicine and pediatrics are teaching largely in terms of biochemistry, thus making an extensive knowledge of this subject necessary in the training of any practitioner."

Meeting of Anesthetists.—At the annual meeting of the Eastern Society of Anesthetists, Boston, October 8-12, the Canadian Society of Anesthestists met for the last time under that name, as it voted to accept the invitation of the Canadian Medical Association to enter that organization as the section on anesthesia of the Canadian Medical Association. The Boston meeting was a joint session with the Canadian society and the Boston Society of Anesthetists. The address of welcome was delivered by Dr. Frank H. Lahey, Boston, and the guest paper, Monday evening, by Dr. John Donald of the University of Glasgow. Busses filled with anesthetists went to Mount Auburn Cemetery, Cambridge, Friday morning, to place a floral tribute on the monument of Dr. W. T. G. Morton, and then to the old Bulfinch Building of the Massachusetts General Hospital, where Morton made the first public demonstration of anesthesia. Here a bronze bust was presented to the trustees of the hospital, Dr. F. H. McMechan, Avon Lake, Ohio, making the presentation speech. The speech of acceptance was by the chairman of the board, Mr. William Endicott. The party then went to the auditorium of the hospital, where Graham Lusk, LL.D., of Cornell University Medical College, New York, gave the Ether Day address.

Society News.—At the annual meeting of the Inter-State Post Graduate Medical Association of North America, Atlanta, October 19, Dr. John B. Deaver, Philadelphia, was made president; Dr. William D. Haggard, Nashville, Tenn., president elect; Dr. William B. Peck, Freeport, Ill., managing director; Dr. Edwin Henes, Jr., Milwaukee, executive secretary, and Drs. William J. and Charles H. Mayo, Rochester, Minn. presidents of clinics.——At the fifth annual meeting of the honorary public health society, Delta Omega, Chicago, October 15, Lieut. Col. Edward G. Huber, U. S. Army Medical Corps, was elected president, and James A. Tobey, Dr. P. H., New York, reelected secretary. This society now has six chapters located at Johns Hopkins, Harvard, Massachusetts Institute of Technology, University of Michigan, Yale and the University of California.——The National Society for the Prevention of Blindness and the American Association of Industrial Physicians and Surgeons will hold a joint session, November 26, at the Russell Sage Foundation Building, 130 East Twenty-Second Street, New York.——Dr. Paul P. McCain, medical director and superintendent, North Carolina Sanatorium for the Treatment of Tuberculosis, Sanatorium, N. C., has been elected president of the Southern Sanatorium Association for the ensuing year.——At the annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, St. Louis, October 15-19, Dr. Harris P. Mosher, Boston, was made president; Dr. William H. Wilder, Chicago, president elect; Drs. Frank E. Burch, St. Paul, Harry W. Lyman, St. Louis and John H. Dunnington, New York, vice presidents; Dr. William P. Wherry, Omaha, executive secretary, and Dr. Secord H. Large, Cleveland, treasurer. The next annual session will be at Atlantic City, in 1929.——Herbert Hoover was reelected president of the American Child Health Association at the recent annual meeting in Chicago; Dr. Livingston Farrand, president of Cornell University, Ithaca, N. Y., vice president, and Dr. Thomas B. Wood, New York, secretary.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 6, 1928.

The Evils of Medical Socialism

In previous letters to THE JOURNAL the excessive expenditure on drugs was shown to be an evil necessarily arising from the socialistic nature of the national health insurance act. The system devised to check such waste is causing an outcry from the labor party, which of course regards itself as representing the insured. For the detection of "excessive prescribing" the insurance committees are grouped in areas with a central office in which the chief duty is to "price the prescriptions" of panel physicians for the purpose of deciding the amount of remuneration due to pharmacists, and to make returns to the ministry of health. Officials of the ministry are thus able to suggest that the prescriptions of particular physicians "have imposed upon the funds a charge in excess of what was reasonably necessary for the adequate treatment of the patients concerned." When the physician is arraigned, he is given an opportunity of explaining his action. He may, if he choose, receive a visit from his regional medical officer, who will be accompanied by a member of the panel committee if the panel committee so desires, or he may write directly to the ministry of health. In either event the physician's statement is examined by the ministry and, "if it is considered that there is prima facie evidence of extravagance," the matter may then be referred for decision to the panel committee; that is to say, to the physician's professional neighbors. A physician may be censured for "unnecessary use of expensive preparations or ingredients, an unnecessary frequency in writing prescriptions for the same cases, the continuance of medicine for an unduly prolonged period, or an excessive use of flavoring agents." To this it has been objected, "Who except the physician in charge of the case can say if any prescription or any ingredient is unnecessary? Professional colleagues may conceivably reject the methods of treatment employed by the physician, and may consequently consider as excessive or extravagant preparations and drugs on which he has learned to rely. The physician, in fact, is liable to be punished because he has failed to conform to a standard or has exceeded an average." In a letter to the *Times* a labor member of parliament, Mr. Ammon, complains that one of the latest triumphs of British industrial chemistry—the synthetically produced vitamin D—cannot be prescribed by panel physicians. He enlarges on the great benefit which would accrue to humanity by the improved facilities for presenting "this all-important remedial agent" and quotes an optimistic report in a leading medical journal. He also quotes from an editorial in the *Times*, which says that no one except the physician in attendance on a patient is competent to resolve the difficult and important question whether or not a particular remedy is suited to the needs of that patient.

These arguments display the undue credulity concerning the claims of new remedies which one might expect from the laymen but which unfortunately are not unknown in the medical profession. Whether synthetic vitamin D is so much better than the less costly ordinary foods containing the vitamin that the expense is worth while is far from proved. These arguments only show the need to protect the taxpayer against extravagance. It is not a question of each physician knowing best what is required for his patient but of the personality of certain physicians who easily become faddists with regard to new and expensive preparations. The insurance act, without the safeguards to which objection is made, furnishes a unique opportunity for extravagance. It is not surprising that a labor member should be indifferent on this point, though the disastrous effects to the country of the ignoring by his party of the element of expense might have taught him something.

Another critic who roundly denounces the whole panel system, Dr. Graham Little, dermatologist and member of parliament for London University, has unwittingly furnished a refutation of the very charge which he makes. He says that the insurance act would not work at all but for the fact that the physicians pass on all serious cases to the hospitals, where they receive proper treatment. Now it has been pointed out that the prescribing at the hospitals, which supply the medicines, is efficient but has to be done economically and that expensive proprietary articles are never ordered, even those which are permitted under the insurance act. Thus the panel physicians have even more latitude than is allowed at the hospitals, whose treatment is extolled. The whole trouble is that certain physicians will take proprietary articles at their face value.

The Law of Incest

In spite of the progress of civilization the archaic lingers in Britain a great deal, in the law in particular, as shown by a case in the Glasgow high court. Following the Old Testament, the law probibits the marriage of closely related persons, such as uncle and niece, which may be defended on biologic grounds, but the prohibition also extends to several connections by marriage, when there is no blood relationship and therefore no biologic reason. It was only in 1907 that marriage with a deceased wife's sister was made legal and in 1921 with a deceased brother's widow. But marriage between uncles and nieces by marriage is still illegal, though an attempt to remove this unreasonable prohibition nearly succeeded last session in the house of lords; it was defeated mainly as a result of an appeal by the Archbishop of Canterbury. As a consequence of this prohibition, an uncle and his niece by marriage were convicted of incest in the Glasgow high court.

Sir Arthur Keith's Creed: "I Believe in Science"

Under the heading "I believe in . . ." the *Daily Express* has published a series of articles by well known writers "as a challenge to modern cynicism and flabbiness. . . . It matters not much what is believed so long as there is some unchanging sanctuary of thought and emotion." The writers are mostly literary men who have given as ideals of their belief such things as "England," "Efficiency," "Poetry," "God," "Beauty," "Children," "The Protestant Church." Only few of the articles deal with religion in any formal sense. Sir Arthur Keith's title is "I Believe in Science." He begins by pointing out the change that has occurred in Scotland, where he was born sixty-two years ago. The population then was 3,225,000, and the amount of land under cultivation was 1,470,000 acres. Today the population is 4,888,700, and the tillage has sunk to 1,147,000, less than a quarter of an acre to each person. And yet today the people are better fed, better housed, better clothed, better educated than in his boyhood. England is in a like case. The apparently impossible has been achieved by brains, which are the instrument of science. "In Britain we no longer depend on the fertility of our soil but on the fertility of our brains. Science has become our national sheet anchor; that is why we must believe in it. No nation lives so dangerously as we do. We must have access to all the markets of the world. Applied science has brought our industrial cities into being: their future depends more on the chemist, physicist and engineer than on the statesman. Industry is now the backbone of England and science is the backbone of industry. Physicians have enrolled the whole army of science to assist them—the physicist, the chemist, the biologist and the bacteriologist. Medicine progresses because its practice is becoming more and more based on science." But Sir Arthur Keith would far from suggest that science has conquered the human body: "Those who know that structure best are most conscious of how gross our ignorance is of many of its parts and many of its functions. I need

only instance that fell disease of growth—cancer." But, he says: "No one who knows what science has accomplished will have any doubt that this citadel will also capitulate to scientific inquiry. Through science, medical men work toward an ideal —a time when it will be possible to guarantee to every one health at birth, a life free from suffering, disease and death only when the vital energy has come to an end in natural old age. Man is now beginning to think of applying science to the improvement of the human species. In all modesty I may claim that mankind could be improved; scientific men are convinced that in times long past man improved vastly in body, brain and behavior. . . . Science is our only guide into the future. . . . Men like Sir J. J. Thomson and Sir Ernest Rutherford have penetrated the structure of the smallest particle of matter and find planetary systems in miniature. For all these reasons I believe in science; on its growth I base my hope of the world's future and man's progress. But I also realize that there is much in man which science can never satisfy. There is our sense of beauty—science may explain it but cannot replace it. There is our emotional life—the springs of love, hope and charity; at the best science can only explain them. I doubt if it can deepen or improve them. Science is but one essential for life, but it is so important that I place it in a category by itself."

The Report on Ethyl Gasoline Criticized

As stated in a previous letter (THE JOURNAL, September 1, p. 655) the committee appointed by the government has made an interim report endorsing the American view that ethyl gasoline may be used for automobiles. However, there is a certain amount of opinion in this country among chemists and physicians that such use of this substance is dangerous. In a letter to the *Times*, a well known chemist, Prof. H. E. Armstrong, accuses the committee of accepting American conclusions without critically sifting their sufficiency. He objects to the specious use of the term "ethyl" in such a connection, which is calculated to mislead and fails to warn. Ethyl is the technical name of C_2H_5 and should not be used in any other sense. "The Americans seem to have emphasized lead and to have thought of and tested for little else." But Professor Armstrong holds that lead tetra-ethide is not dangerous primarily as a lead poison but as a poison in itself acting as a whole, as a neutral liquid poison akin to the solvents used in varnishing fabrics, which have caused much serious poisoning. It has a special affinity for fatty tissues and is likely to pass into the nervous system and brain. Though the amount of poison to which we are exposed at present may be homeopathic, it must be remembered that makers are alive to the greater efficiency of high compression for internal combustion in the presence of anti-knock materials. Advance in this direction, secured by ethyl gasoline, will cause the nuisance to grow. Better therefore nip the danger in the bud.

Immunity of the Jews to Tuberculosis

At the annual congress of the National Veterinary Association, Mr. W. C. Miller of Edinburgh dealt with some of the unsolved problems of disease resistance among men and certain species of animals. Certain races of cattle possessed of light colored coat and hide contracted tuberculosis more easily than those with dark coats when put in an infected place. This was in accord with the statement of authorities that blonds with an auburn silky hair and pale freckled skin of fine texture showed much greater susceptibility to tuberculosis than did the Jewish race in the United States or the most populous parts of Europe. The mortality from tuberculosis among the Jews was 37 per thousand, whereas the total mortality of the American population was 138. The Jews therefore had a greater resistance to tuberculosis than the blond races. Mr. Miller has evidently overlooked the fact that a different explanation than color has been given for the relative immunity of the Jews to tuberculosis. Since they have been scattered over the world the Jews have been city dwellers, often crowded into ghettos, for a longer period than the European races. By natural selection they have therefore become better adapted to the urban life, which is partly, at any rate, responsible for tuberculosis. Their different food habits and fondness for fats may also have played a part.

Women and Medicine

The controversy aroused by the decision of certain of the London medical schools to revert to their prewar practice of excluding women medical students has been described in previous letters. Naturally the various women's organizations have entered into the fray. A joint committee appointed by them has issued a memorandum urging equal opportunities for women with men in the medical service. The committee is of the opinion that the general tendency will be toward a steady increase in the number of women in medicine in the future, for which it gives the following reasons: increasing demand for women physicians under local authorities in child welfare and maternity clinics, maternity hospitals, etc.; the probability—amounting to practical certainty—that within a few years either the system of national health insurance will be extended to cover dependent wives and children or a national health service covering these classes will be set up; a steadily growing demand in private practice for women physicians; the growth of population around London; and an anticipated increased demand for physicians to practice in the East, especially in India. The committee contends that the closing to women of certain medical schools "will not increase the total number of male students but merely result in their being somewhat differently distributed. It seems possible that the shortage of male students, which is attributed by some of the medical schools to the unpopularity of coeducation, has been in fact due to inferior reputation as teaching centers which these schools have enjoyed." Passing over the "enjoyment" of an inferior reputation, these women seem a little inconsistent in their desire to have such inferior schools open to them. A very old proverb is suggested.

PARIS

(From Our Regular Correspondent)

Sept. 11, 1928.

The Physical Examination Required of Candidates for Admission to the Ecole Normale

Dr. Gardiol, deputy for Basses-Alpes, has addressed to the minister of public instruction a letter in which he requests a revision of the judgment passed on several students from Basses-Alpes who were candidates at the recent competitive examination of the Ecole Normale. Eight of these students, after passing an excellent written examination, were rejected for failing to pass in a satisfactory manner the medical physical examination. Dr. Armand Besson, physician of the Ecole Normale d'Institutrices du Cher, who has had twenty years of experience, has explained that the physical examination is at present carried out by three physicians: the physician of the Ecole Normale, a physician of established authority in matters pertaining to the treatment of diseases of the respiratory passages, and a sworn physician. These practitioners have received from the university administration rigorous and most judicious instructions, especially with regard to the discovery of tuberculous subjects. Every candidate whose health appears of doubtful character is subjected to a thorough examination by these physicians, who do not advocate his elimination until they have discussed his case in detail. The medical commission, if it does not find evident organic lesions, gives wide consideration to the fatigue entailed by the preparation for the examination. Candidates who show great signs of fatigue are reexamined in October, and at that time, owing to the recuperative effects of

the long summer vacation, they will, nine times out of ten, pass successfully the physical examination. The present regulation has the drawback that it causes to be rejected, for reasons of health, candidates who have already done the work required for admission to the school. Dr. Armand Besson suggests that, under these conditions, it would be preferable to give candidates their physical examination at the time the registration lists are closed. The right to a second examination was introduced three years ago, but it did not seem to give good results and has been abolished.

The Crusade Against Tuberculosis

M. Loucheur, minister of health, labor, welfare and social provision, has decided to organize a special crusade against tuberculosis. He has visited the model sanatorium at Bligny and conferred with M. Bonnefoy-Sibour, prefect of Seine-et-Oise, and M. Brébion, inspector of the Assistance Publique (public welfare) and secretary general of the Comité départemental de défense contre la tuberculose, on the program adopted for the protection of the population of Seine-et-Oise against the disease. The Sanatorium de Bligny, in Seine-et-Oise, is directed by Dr. Guinard, who presided, twenty-five years ago, at its foundation. M. Loucheur spoke as follows: "After the war, we were compelled to make a gigantic effort to bring about the reconstruction of the devastated regions. There remains for us today to undertake a work of the same order of magnitude; namely, the crusade against tuberculosis." The minister expressed the wish that the hospitals might have a dental department, for the importance of good mastication for the digestion of tuberculous persons is well known. A roentgenologic department and special rooms for artificial pneumothorax are likewise indispensable. M. Bonnefoy-Sibour has obtained from the general council of Seine-et-Oise a vote approving the creation of a departmental sanatorium. The prefect wishes likewise to provide his department with large general hospitals, in order to avoid sending patients to the institutions in Paris and to do away with the *poussière d'hôpitaux* (small hospitals on every hand), which in Seine-et-Oise render insufficient service.

The Escape of Patients from Psychopathic Hospitals

The escape of the inmates of psychopathic institutions is of relatively frequent occurrence. Nurses (men or women) are then commissioned by the administration of the institution in question to go to the home of the patients or to the homes of members of his family where the patient is presumably concealed, and to bring him back to the hospital. Under these conditions, M. Louis Gélis, member of the general council of the Seine, has asked the prefect of the department of the Seine whether, in view of the danger that such nurses incur to whom are assigned such perilous missions, the hospital administrations are justified in giving such orders, and, if so, what their responsibilities would be toward their agents if an accident should occur. As is well known, the law does not permit the police to enter a home to render aid to the nurses. There is, therefore, a point here that demands solution.

The Third Convention of Psychoanalysts of French-Speaking Countries

The third convention of psychoanalysts of French-speaking countries was held in Paris, in the service of Prof. H. Claude at the Asile Sainte-Anne, on the occasion of the Congress of Alienists. M. Codet of Paris and Dr. Smith Ely Jelliffe of New York presided at the convention. Two papers dealing with the technic of psychoanalysis were presented. M. Loewenstein of Paris dealt with the theoretical aspects and M. Laforgue of Paris with the clinical side of the subject. Several well known specialists took part in the discussion: MM. Hesnard of Toulon, de Saussure of Geneva, Pichon of Paris, Codet of Paris, Borel of Paris, and Madame Marie Bonaparte. The main topic on the program for next year is: The Rôle of Homosexuality in the Neuroses of Women; the chief speaker is M. de Saussure.

The Epidemic of Aphthous Fever, or Foot and Mouth Disease

The epidemic of foot and mouth disease has reached the canton of Audeux in the arrondissement of Besançon, and in the department of Haute-Saône the arrondissement of Vesoul. It is said to be seriously prevalent in Pin-l'Emagny, a commune of the canton of Marnay. Cases have been reported in Lozère, in the region of Mende. In Normandy, the department of Calvados has a number of epidemic foci, notably in the vicinity of Thury-Harcourt.

The Epidemic of Dengue in Greece

French specialists have been called to Athens to combat the epidemic of dengue that is spreading in Greece at the present time. The government of Greece is creating a ministry of health and plans to organize a special medical service at once.

AUSTRALIA

(From Our Regular Correspondent)

Sept. 12, 1928.

Low Prevalence of Tuberculosis in New Zealand

The minister of health of New Zealand has appointed a committee to inquire into the prevention and treatment of pulmonary tuberculosis in that country. The committee reports that this disease, as far as can be ascertained, is less prevalent in New Zealand than in any other country. The committee recommended that the routine use of tuberculin in sanatoriums be discouraged because its use as a therapeutic agent was of questionable value. Dr. Blackmore, director of tuberculosis institutions in the North Canterbury district, does not agree with the committee in the latter regard. He considers that tuberculin is the best remedy we possess at the present time, although it is not a cure for tuberculosis. Speaking from an experience of thirty-five years of tuberculosis treatment, he has found that tuberculin, when properly administered, has a marked effect on the disease and many relapses are thereby prevented.

Wireless Installation at Hospitals

The Alfred Hospital, Melbourne, containing 340 beds, was the Australian pioneer in the provision of wireless head phones whereby broadcasting programs were brought to the bedside. With no precedent to guide the enthusiasts, the technical difficulties of installation were numerous but were gradually overcome. At present, four years after the first aerial was erected on the hospital tower, there are 300 head phones distributed over a circuit of 2½ miles, supplied by a four valve receiving set. No operator is necessary, a time clock and other automatic apparatus controlling the reception. It has been found that the quantity of sedative drugs that are distributed to insure sleep is reduced, the patients frequently falling to sleep with their head phones in situ. The advantages of this method of distracting the patient's attention from his bodily discomforts were soon realized, and other Australian hospitals soon availed themselves of the technical experience gained at the Alfred Hospital. It has been found that once the installation is complete the cost of upkeep is negligible.

"Patent Medicine" Legislation

Uneasy lies the head that invents nostrums for the exploitation of the Australian public. All states were represented at an Australian foods and drugs conference held in 1927. The recommendations that were established then are now being brought into force. Victoria was the first state to take action and now Western Australia is taking up the control of this traffic. Feb. 1, 1929, regulations will come into force in West-

ern Australia which provide for a label declaration in bold letters of the drugs contained in the bottle. The regulations also prohibit any statement whereby a cure or remedy can be claimed or suggested for asthma, Bright's disease, cancer, consumption or gout. A drug or medicine must not be described as a panacea, a cure for baldness, a skin, hair or nerve food, or that it will develop the bust, raise the height or eradicate wrinkles. The label shall not bear the name of a fictitious person, nor shall the medicine be named so as to conceal its proprietary character.

Postgraduate Lectures in Melbourne and Sydney

Prof. Francis R. Fraser, director of the medical unit of St. Bartholomew's Hospital, London, is visiting Australia at the invitation of the postgraduate committee of the British Medical Association in Australia. He will lecture on cardiology to the members in Melbourne and Sydney.

Urologic Laboratory for Sydney University

Dr. Gordon Craig, a prominent Sydney urologist and one of the senior medical graduates of that university, has presented the sum of £10,000 to the senate of the Sydney University for the purpose of promoting research in urology. A previous donation of £4,300 had previously been made from the same source for a similar purpose. In addition to these sums, Dr. Craig has offered to transfer his fully equipped private laboratory to the university with the wish that the laboratory be established at the Royal Prince Alfred Hospital. Provision in the terms of the gift has been made whereby it may be devoted to some other form of medical research should the original application be unpracticable at some future time. The conditions of this gift are evidence of the modern tendency to amalgamate university and hospital research. An Australian precedent already exists at the Walter and Eliza Hall Institute of Medical Research in Pathology and Medicine in connection with the Melbourne Hospital and the Melbourne University.

JAPAN

(From Our Regular Correspondent)

Oct. 2, 1928.

The Pollution of City Air by Smoke

In order to render Tokyo and the other large cities as smokeless as New York and Paris, investigations of fuels and fuel apparatus have been made by the army and navy, and some fuel laboratories in this country. On a small scale, some smokeless fuels have been produced recently. Mr. K. Arimoto, a health officer of the Tokyo Health Bureau, has published the results of his investigations. He says that the people in this country do not pay so much attention to avoiding the smoke in the air as to the improvement of sewage disposal, which runs to considerable expense every year. According to his investigations, made for a year, in Tokyo 2,200,000 tons of coal is consumed yearly. In the city of Tokyo, 25.94 tons is the average monthly amount of falling soot per square mile. This soot is found to contain more than 26 per cent of combustible matter. Further figures on the amounts of falling soot in different sections of the city are as follows: residential section, 21.64 tons; industrial section, 23.85 tons; commercial sections, 46.47 tons; in the suburbs: residential section, 14.49 tons; industrial section, 25.34 tons. Osaka, the manufacturing city, burns 300,000 more tons of coal than Tokyo in a year. The average monthly amount of falling soot per square mile there is 38 tons in the city, and 21 tons in the suburbs.

Health of the Imperial Guards

The Japanese Imperial Guards are the soldiers who are supposed to be chosen for their good health as well as their social standing and moral character. Recent investigation, however, has shown them to be far inferior in health to the soldiers of the other divisions in the big cities, such as Tokyo or Osaka; that is, the number of cases of tuberculosis and pleurisy are comparatively higher among the guards. The chief causes are said to be as follows: 1. In comparison with the other soldiers, the imperial guards have more service and sustain greater mental and physical fatigue, because of guarding the imperial family and the palaces. 2. Their social standing seems to have been thought of more than their health or physical constitutions. 3. The present barracks were built half a century ago; therefore they are poorly ventilated and lighted as compared with modern methods. 4. The guards are rather indifferent to the fact that tuberculosis is easily contracted in big cities.

Dr. Kurabayashi, chief of the medical department of the imperial guard division, thinks that most of the guards are not suited to the climate of Tokyo because they are all from different parts of the country and do not get used to hard labor because they have been brought up in rather wealthy homes. The number of the soldiers will soon be increased, and the defects will be eliminated as rapidly as possible.

Cholera Vaccination for Seamen

In order to take precaution against the invasion of the epidemic of cholera from Shanghai, the home ministry of this country sent a circular to all the local quarantine stations. Beginning August 13, the Osaka authorities intended to vaccinate about 100,000 persons in the ships or boats staying in the canals or harbor. No cases were reported up to September 1.

The Encouragement Funds for Scientists

According to the Official Gazette of August 13, among the scientists who are to be granted the government encouragement funds for this year are more than seventy men of medicine who are professors on the staffs of medical colleges, institutes or laboratories. As this is the new term for beginning the three years of continued work, several new scholars with new themes for studies have been appointed. The amount of the funds will be increased for the next fiscal year.

Establishment and Reconstruction of Leprosariums

The Hokubu Hoyoin Leprosarium in northeastern Japan was burned early in August, but it is to be reconstructed as was decided on at a conference since held in Aomori. In Tokyo an association for the prevention of leprosy has been organized by Viscount Shibusawa and Mr. Mochizuki, the home minister of Japan, and a new leprosarium will be established by the association shortly.

Increase of Students' Inspectors

The students' inspectors in the universities and other public colleges are to be increased in number, beginning October 1 this year. The local governmental medical colleges will have their quotas, as was decided by the authorities at the deans' conference held, July 23-24, in Tokyo.

Personal

Dr. Nagayo, director of the government institute for the study of infectious diseases, who attended the international conference for the standardization of serums and other drugs, arrived in Tokyo, August 24. Dr. Sato, professor of the Tokyo Girls' Medical College, and Dr. Nobechi, sanitary expert of the home department, have also returned to Tokyo by way of Siberia.

In behalf of Baron Dr. Takaki, professor in the Jikei Medical College in Tokyo, his quarter centennial of service will be celebrated by the faculty and his friends.

Dr. Kato, professor in the Tohoku Imperial University has changed his proposed route to Cairo, Egypt, and will go by way of Siberia. The S. S. *Kitano*, which he intended to take for his voyage, was recently damaged on the English coast.

At the imperial enthronement ceremony in November, it is rumored that Baron Kitasato will be promoted to the title of

viscount, while Drs. H. Miyake and T. Irizawa will be made barons.

The death of Dr. R. Futamura was reported, June 27. He was 56 years old and was a professor in anatomy at the Nihon Medical College.

Dr. T. Sakurai, professor of the Kyushu Imperial University, died, August 27, at the age of 57. He was an authority on anatomy in this country.

Dr. K. Sakaguchi, professor in the Tokyo Imperial University, has been appointed chief of the Metropolitan Police Hospital, which was recently established in Kojimachi, Tokyo.

Dr. M. Fukushi, chief of the Izumibashi Charity Hospital, Tokyo, and professor in the Nihon Medical College, arrived in Tokyo, August 30. He had been in Europe and America for nearly a year observing various medical establishments.

BERLIN

(From Our Regular Correspondent)

Sept. 22, 1928.

Welfare and Hygiene in the Postoffice Department

The minister of the federal postoffice department issued recently a pamphlet entitled "Richtlinien für den Ausbau der Wohlfahrtspflege" (a guide for the promotion of welfare work and the improvement of hygienic conditions), from which the following suggestive excerpts have been taken:

IMPROVEMENT OF SURROUNDINGS AND WORKING CONDITIONS

The care of the health of the personnel is regarded as one of the most important tasks of the administration. Hygienic surroundings and good working conditions are necessary for the personnel to work efficiently. Thus, provision should be made for the regular and thorough cleansing of working rooms, for a constant supply of fresh air, and for adequate heating of the rooms during the cold season. Such care should be extended also to railway mail cars in which the mail clerks work under crowded conditions. Ventilation will be improved in the larger postoffices and mail handling centers if the clothes lockers are set up outside the working rooms; or if special rooms are provided for the hanging up of wraps and overcoats. A sufficient number of clean toilet rooms must be available, and lavatories should be conveniently located, especialy in the services in which the personnel easily soil the hands, as in the receiving departments, the despatching departments, the letter carriers' department, the packing rooms, the machinery room, the rooms with batteries and commutators, the service rooms of the line supervisors, and the work shops. Lavatories must have an ample supply of clean towels and soap. All buildings should have an abundance of running water, and all new postal stations with a large personnel should be provided with shower baths. Lunch counters should be available in the building, or near by, where food and beverages may be procured at moderate prices, and fireless cookers (or some such arrangement) should be provided for the warming of food and beverages that employees bring with them for lunch. In some instances, automatic devices may well be employed for the dispensing of soups, coffee, preserves, and the like. Through arrangements with milk dealers, the personnel may be supplied with fresh whole milk at reasonable prices, and, through similar connections, with carbonated waters and other nonalcoholic beverages. New buildings, if it is feasible, should have roof gardens so equipped that, during favorable weather, they may be used for recreation, instruction and gymnastic exercises. It may also be found that, in some instances, the yards about service dwellings may be used by the personnel at certain periods of the day. Mechanical devices for the lifting and carrying of heavy bags of letters or packages would be desirable, as the principle should be followed that work must be performed with the slightest expenditure of strength. Pictures on the walls and the presence of potted plants will tend to improve the appearance of the work rooms and to awaken a certain sense of comfort in the personnel. The noise caused by the use of machines, the stamping of letters and packages, and the movements of trucks, and the like, should be diminished by the use of a suitable floor covering, isolation of machines and stamping devices, and the use on trucks of ball bearings and rubber tires. Where health officers of the postal department are stationed, they should be requested to inspect all service rooms as to their hygienic status. If officers of the postal department are not available, other health officers may be called in to perform such duty.

MEASURES FOR THE PROMOTION OF THE PERSONAL WELFARE

Owing to the increase of tuberculosis as compared with the prewar period, about 500,000 marks have been expended annually, in recent years, in combating this disease. Funds have been used particularly to supply treatment for tuberculous government clerks and officials and their families; to facilitate after-treatment of officials who have been dismissed from sanatoriums, and to place children who have been living in a tuberculous environment in more suitable homes. As the care of the tuberculous gains in extent, special emphasis will be placed on preventive measures. Aside from other measures, the following deserve consideration: 1. It should be the duty of the health officers of the postal department to report to the authorities cases of tuberculosis discovered among the personnel or their families, in order that prompt intervention may be assured. 2. Government clerks and officials who are suspected of being infected or who have been exposed through their environment should be reexamined at intervals by the health officer of the postal department or by some other health officer. 3. By means of the bulletins on tuberculosis and the "Instructions for combating infectious diseases in the postal and telegraph departments," the personnel should be informed as to the cause, mode of transmission and prevention of tuberculosis. 4. An inquiry should be instituted to ascertain whether the clerks who are issued special clothing as protection against respiratory diseases should be increased in number, and if so whether their clothing allowance should be continued as it is. 5. In certain instances, patients who are dismissed from sanatoriums should, on resuming work, be given lighter tasks or be transferred to more favorable regions for a time. 6. Clerks and officials who live in unhygienic quarters and who are unable properly to isolate tuberculous patients and exposed children should receive preferential consideration in the allocation of dwellings or apartments for rent.

All movements launched by the personnel or their representatives with a view to providing the personnel, during their spare time, with improved opportunities for recreation and diversion should be encouraged by the granting of special appropriations. Among other movements that deserve government support may be mentioned: (1) the home gardeners' society, and other similar societies, for the promotion of gardening and animal husbandry, and the like, on a small scale; (2) the creation of special recreation parks by the representatives of the personnel in the vicinity of middle sized and large cities, and the erection of simple homes or summer camps; (3) the promotion of kindergartens and playgrounds created by the representatives of the personnel, in the vicinity of the larger cities; (4) all endeavors of the personnel that have in view the preservation and advancement of physical and mental health through bodily exercise; (5) extension of the gymnastic exercises that heretofore have been utilized only for the women employees of the telephone exchanges, during the rest periods, to further groups whose work is of a similar monotonous nature; (6) the granting of special benefits to members of the families of postal employees who are in need of more recreation, and (7) special consideration of children of postal employees who need to be

placed in recreation homes or supplied with milk and other strengthening food.

The foregoing hints and suggestions are published in full in the *Deutsche medizinische Wochenschrift*. Professor Friedberger, the hygienist, has commented on them as follows: Hygienic workrooms alone do not help much, if nothing is done to carry out other exceedingly important hygienic demands. A central commission should be appointed and assigned the duty of solving the housing situation for the postal employees by the launching of wide-scale building enterprises. If possible, in the vicinity of all postoffices large garden apartment houses equipped with modern labor saving and heating devices should be erected for the accommodation of postal employees and their families. Home gardening should be fostered; for the larger part of the postal employees it is of greater importance from the standpoint of improved health of body and mind than the more vaunted participation in sport activities. The great importance of sport must be recognized, but first comfortable homes—then home gardens—then athletic fields.

TURKEY

(From Our Regular Correspondent)

Oct. 4, 1928.

Campaign Against Trachoma

At the close of the war trachoma in Turkey became a serious problem, for the male population had spent much time in Syria, Arabia, Mesopotamia, Persia and Egypt, where contact with the infected native population was inevitable. Trachoma is especially widespread among the rural population of the eastern provinces of Anatolia on account of the lack of knowledge of its prevention on the part of the population. At the second national medical congress the problem of trachoma was the first subject of importance. The initial steps in regard to trachoma were taken in 1925, when the ministry of hygiene requested the health departments in the infected areas to make a survey of the situation, through which it was revealed that two townships and the city of Malatia in the Malatia province had the highest percentage.

In the eastern and southern provinces the percentage is as follows: Urfa, 52.9; Mardin, 57.8; Diarbekir, 23.0; El-Aziz, 28.4, and Aintab, 53.2. In the northeastern provinces, medical inspection of school children revealed trachoma in 21.2 per cent in Erzerum, in 30 per cent in Erzingan, in 8.4 per cent in Kars, in 7 per cent in Sari-Kamish and in 10 per cent in Tokat. In western Anatolia the percentage of trachoma in Smyrna was 1.6; in Aidin, 10; in Balikessir, 2; in Kutahia, 5, and in Eski-Shehir, 2.5. The actual campaign began in 1926, an appropriation being granted for the purpose, and a mission, consisting of five specialists, two assistants, a score of sanitary inspectors, and trained orderlies, with special equipment, commenced work in the province of Malatia. A dispensary with five beds was opened in the city of Malatia, and a twenty-five bed hospital was opened in Husnimansor, where the mission examined 36,321 persons, from forty-eight villages, on whom 1,158 were found infected and seventy-nine in need of hospital treatment. During one year at the hospital dispensary, 3,035 patients received ambulatory treatment and 378 hospital treatment; 658 operations were performed. At the Malatia dispensary, 3,369 persons were examined; 1,740 were found infected, and 205 received hospital treatment. Here 701 operations were necessary. All treatment, operations and medicaments were free of charge. During 1927 the work was continued and another dispensary was opened in Behisny. This year a dispensary is to be opened in Kiliss on the Syrian border. The ministry of hygiene plans, if funds are available, to establish a trachoma institute in the city of Adana, the province of Adana having a high percentage of trachoma. This institute is to serve as a teaching center where ophthalmologists and sanitary inspectors engaging in trachoma work may also gain practical experience. Antitrachoma work is also being carried on in other parts of the country, by health departments, government and municipal hospitals, and a free dispensary established and supported by a private citizen of Adana.

Law Regarding Biologic, Serologic, Bacteriologic, Chemical and Food Laboratories

The need for special regulations in connection with laboratory work has for a considerable time been manifest, wherefore a bill introduced by the ministry of hygiene was accepted by the national assembly, March 19. The first of the thirteen articles says that only physicians, veterinarians, pharmacists and chemists licensed in Turkey, and with special qualifications, are to be charged with the operation of a public or private laboratory after permission has been granted by the ministry of hygiene. Application is to be filed with the director of the provincial health department and is to be accompanied by a birth certificate, diploma, evidence of special study made either in Turkey or abroad in a recognized standard institution, name of laboratory, full address, plan of laboratory, specification of analysis, a price list for different analyses, names and qualifications of other specialists employed in the laboratory, and specification of equipment. After verification of statements on the application by the ministry of hygiene, a license is granted within one month. Laboratories already established at the time of promulgation of the law are recognized, though a new license has to be applied for within two months. The person in whose name the license is made out will be held responsible for the accuracy of all scientific procedures and the accuracy of all other work done in the laboratory. Once a year all laboratories are subject to general inspection, and, if deemed necessary, inspection is to be repeated at shorter intervals. The inspector, having given due evidence as to his identity, is to make an examination of the books and the equipment, and the responsible director in charge is obliged to answer all questions in regard to any laboratory procedure.

The plans of biologic, serologic, bacteriologic, chemical and food laboratories, the instruments and apparatuses in use, the keeping of books in regard to laboratory procedure on performing the Wassermann test, instruments and articles used in making this test, and standards for determining the reactions of the test are subject to regulations fixed by the ministry of hygiene.

In case the proprietor of a laboratory wishes to close or to transfer the laboratory, the director of the provincial health department is to be notified at once. A specialist doing laboratory work at the time of enforcement of this law and whose laboratory has not previously been licensed will have his laboratory closed until a license has been issued. A person (not a specialist) having opened a laboratory, or a specialist who turned the operation of the laboratory over to a nonspecialist, will be fined from 50 to 200 Turkish pounds besides having his laboratory closed. A person having previously opened a laboratory with insufficient equipment is given a certain time in which to bring the equipment up to standard. In case of noncompliance with the standard, the license will be revoked and the laboratory closed.

If, in a laboratory, there is evidence of unscientific procedures and articles of equipment are found not to comply with previous statements, or there is other evidence contrary to regulations, the proprietor will be fined from 50 to 200 pounds. A second offense is subject to a second fine and closure of the laboratory for not more than one month. In case of repeated offenses the license will be revoked and the laboratory closed permanently. Fines, revoking of license and closure of laboratory are subject to court decision without appeal.

This law is to be enforced fifteen days after promulgation. The minister of hygiene and the minister of justice are charged with the execution of this law.

Marriages

HENRY CLAY CHENAULT, Hot Springs National Park, Ark., to Miss Kathryn Demby at Nowata, Okla., October 7.

CARL LEONARD MULFINGER, Los Angeles, to Miss Elizabeth Gay Bainter of Pasadena, Calif., September 29.

PATRICK E. WRIGHT, Wisconsin Rapids, Wis., to Miss Elsie Catherine Juneman of Stratford, September 25.

VICTOR WESLEY LOGAN, New York, to Miss Martha Skinner of Holyoke, Mass., October 20.

JACOB WILKINS, Richmond, Va., to Miss Rebecca Silber of Washington, D. C., September 25.

HERMANN DUESING, Bridgeport, Conn., to Miss Martha Schmelter of Fairfield, October 6.

JAMES HOOPER STILES to Miss Marguerite Bennett, both of Lubbock, Texas, September 29.

MATTHIAS MARQUARDT to Miss Ruby M. Dennis, both of Augusta, Maine, August 6.

Deaths

Frank Butler Granger ✠ Boston; Harvard University Medical School, Boston, 1902; member of the Council on Physical Therapy, American Medical Association; lecturer on physical therapeutics, 1906-1910, and assistant professor of physical therapy, 1927-1928, Tufts College Medical School; instructor, Harvard Medical School, courses for graduates, 1911-1925; physician for physical therapeutics, Boston City Hospital, and neurologist to the Boston City Dispensary; formerly on the staffs of the Boston Floating Hospital, Chelsea (Mass.) Memorial Hospital and the Sturdy Memorial Hospital, Attleboro; entered the medical corps of the U. S. Army during the World War as captain and was discharged in 1919 as a lieutenant colonel; organizer and director of the department of physical therapy, division of physical reconstruction, Surgeon General's Office, Washington; at one time counselor of the medical council of the U. S. Veterans' Bureau; past president of the American Academy of Physiotherapy and the American Electro Therapeutic Association; member of the American Roentgen Ray Society; author of "Technic of Physiotherapy"; aged 53; died, October 23, of metastatic carcinoma of the liver.

Charles Frederick Neu ✠ Indianapolis; Western University Faculty of Medicine, London, Ont., Canada, 1894; assistant professor of mental and nervous diseases, Indiana University School of Medicine; formerly lecturer on physiology, pathology and bacteriology at his alma mater; past president of the Marion County Medical Society; at one time curator of the museum and pathologist to the Victoria Hospital, London, Ont., Canada; formerly on the staff of the Central Indiana Hospital for Insane; aged 62; on the staffs of the Robert W. Long Hospital, St. Vincent's Hospital and the Methodist Episcopal Hospital, where he died, October 10, as the result of injuries received in an automobile accident two years ago.

William Huston Tanksley, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1897; member of the Tennessee State Medical Association; formerly assistant instructor at his alma mater; on the staffs of the Protestant and Nashville City hospitals; aged 52; died, October 2, of heart disease.

Alfred Kahn ✠ New York; University of Virginia Department of Medicine, Charlottesville, 1904; formerly instructor in otology, University and Bellevue Hospital Medical College; on the staff of the New York Eye and Ear Infirmary; aged 44; died suddenly, October 8, in Atlantic City, N. J., of heart disease.

Austin Colman Brant ✠ Canton, Ohio; Bellevue Hospital Medical College, New York, 1877; formerly city physician, member of the city board of health and board of education; for many years on the staff of the Aultman Hospital; aged 76; died, October 12, of angina pectoris and arteriosclerosis.

James Vincent Smith, Chicago; Yale University School of Medicine, New Haven, Conn., 1904; member of the Illinois State Medical Society; served during the World War; aged 47; on the staff of the Columbus Hospital, where he died, October 12, of cerebral hemorrhage and hypostatic pneumonia.

✠ Indicates "Fellow" of the American Medical Association.

Austin H. Johnson, Cedar Rapids, Iowa; Rush Medical College, Chicago, 1878; member of the Iowa State Medical Society; formerly on the staff of St. Luke's Methodist Hospital; aged 77; died, September 24, as the result of a cerebral hemorrhage suffered nearly a year ago.

Henry Hartung ✠ Chicago; College of Physicians and Surgeons, Chicago, 1894; formerly assistant professor of surgery at his alma mater; at one time on the staff of the Grant Hospital and member of the board of education; aged 60; died, October 10, of angina pectoris.

Joseph William Hunt, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1907; served during the World War; clinical specialist in the division of preventable diseases, provincial department of health; aged 44; died, July 24, at the Toronto General Hospital.

George W. Jones, Imlay City, Mich.; University of Buffalo (N. Y.) School of Medicine, 1858; member of the Michigan State Medical Society; health officer of Imlay City; formerly postmaster and member of the school board; aged 89; died, September 29, of uremia.

William Cogswell, Haverhill, Mass.; Harvard University Medical School, Boston, 1894; member of the Massachusetts Medical Society; served during the Spanish-American and World wars; aged 61; died, September 26, of arteriosclerosis and cerebral hemorrhage.

Benjamin Franklin Jones, St. Louis; Bellevue Hospital Medical College, New York, 1885; member of the Illinois State Medical Society; aged 65; died, September 7, of cerebral hemorrhage, arteriosclerosis, chronic nephritis and aortic regurgitation.

Martin Van Buren Meddaugh, Detroit; Michigan College of Medicine and Surgery, Detroit, 1892; member of the Michigan State Medical Society; formerly on the staff of the Grace and Providence hospitals; aged 72; died, October 10, of chronic myocarditis.

Charles Chapin Terry ✠ South Bend, Ind.; College of Physicians and Surgeons, Chicago, 1889; past president of St. Joseph County Medical Society; on the staffs of the Epworth and St. Joseph hospitals; aged 62; died, October 4, of heart disease.

Joseph Henri Riopelle, Saginaw, Mich.; University of Montreal Faculty of Medicine, Montreal, Que., Canada, 1894; member of the Michigan State Medical Society; county coroner; aged 60; died, October 12, of cerebral hemorrhage.

Moses Furlong, Chicago; University of Buffalo (N. Y.) School of Medicine, 1882; member of the Illinois State Medical Society; formerly on the staff of the Cook County Hospital; aged 71; died, October 19, of carcinoma of the colon.

Henry Thomas Dana, Cortland, N. Y.; Albany Medical College, 1863; past president of the Cortland County Medical Society; for many years on the staff of the Cortland Hospital; aged 91; died, October 6, of mesenteric thrombosis.

Joseph S. F. Sessford, Washington, D. C.; Georgetown University School of Medicine, Washington, 1885; member of the Medical Society of the District of Columbia; aged 70; died suddenly, September 29, of heart disease.

Benjamin Franklin Lehman, Cincinnati; Miami Medical College, Cincinnati, 1891; aged 59; was killed, September 29, when the automobile in which he was driving was struck by a train, while en route to Springfield, Ill.

Philo B. Conant ✠ Roseville, Ill.; Medical Department of the University of Illinois, Chicago, 1902; past president of the Warren County Medical Society; aged 51; died, September 26, of chronic interstitial nephritis.

Franklin Watson Eskey ✠ Sterling, Ill.; Rush Medical College, Chicago, 1884; formerly on the staff of the Public Hospital of the City of Sterling; aged 70; died, October 14, of carcinoma of the throat.

Paul A. Slater, Hindsboro, Ill.; College of Physicians and Surgeons, Chicago, 1894; member of the Illinois State Medical Society; district health superintendent; aged 61; died, October 1, of carcinoma.

Julius Joseph Bellin ✠ Green Bay, Wis.; State University of Iowa College of Medicine, Iowa City, 1896; medical director of a hospital bearing his name; aged 57; died, September 27, of heart disease.

David Anderson Thomas, Red House, W. Va.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1880; aged 74; died, August 1, of heart disease.

Philip D. Paul, Chicago; Hahnemann Medical College and Hospital, Chicago, 1884; Hering Medical College, Chicago,

1895; aged 78; died, October 5, of arteriosclerosis and myocarditis.

George W. Newberry, Smithfield, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1883; Civil War veteran; formerly a druggist; aged 84; died, October 10, of arteriosclerosis.

William Henry Falker ✠ Chicago; Rush Medical College, Chicago, 1902; formerly clinical assistant in surgery at his alma mater; aged 50; died, in October, of carcinoma of the liver.

Patrick B. Hayes, Chicago; Rush Medical College, Chicago, 1889; member of the Illinois State Medical Society; aged 76; died, October 14, of carcinoma of the sigmoid.

John A. Eisenhauer, Cleveland; Homeopathic Hospital College, Cleveland, 1872; aged 77; died, in October, as the result of injuries received when attacked by thugs.

Oran Edgar Druley, Anderson, Ind.; Medical College of Ohio, Cincinnati, 1889; aged 62; died, October 8, at the home of his daughter in Indianapolis, of carcinoma.

Clarence Francis Clauser, Kimball, S. D.; Rush Medical College, Chicago, 1923; aged 34; died, September 29, of empyema following a cholecystectomy.

Peter Gordon Smoot, Maysville, Ky.; New York Homeopathic Medical College, 1886; aged 64; was found dead in his chair, in October, of angina pectoris.

Carmel Lonzo Davidson, Dighton, Kan.; University of Manitoba Faculty of Medicine, Winnipeg, 1896; aged 48; died, July 31, of carcinoma of the liver.

Charles Allen Whiting ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1896; aged 58; died, October 5, of heart disease.

Hills Cole, Alhambra, Calif.; New York Homeopathic Medical College and Hospital, New York, 1894; aged 57; died, May 5, of gallstones and peritonitis.

Royal James Dunn, Port Huron, Mich.; Medical Department University of Illinois, Chicago, 1904; aged 46; died, September 14, of heart disease.

William A. Pendergraft, Carney, Okla.; St. Louis College of Physicians and Surgeons, 1896; aged 66; died, March 10, at Davenport, of heart disease.

William Wallace Broga, Springfield, Mass.; Albany (N. Y.) Medical College, 1887; aged 75; died, September 27, of coronary thrombosis.

Albert W. Francis ✠ Ripley, Ohio; Medical College of Ohio, Cincinnati, 1889; aged 69; died, October 10, at Columbus, of heart disease.

Robert Shaw Tyrrell, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1876; L.R.C.P., London, 1877; died, in August.

George G. Perry, Richmond, Ky.; College of Physicians and Surgeons, Baltimore, 1890; aged 72; died suddenly, September 28.

Frank Orlando Manning ✠ Pleasantville, N. Y.; Long Island College Hospital, Brooklyn, 1883; aged 67; died, October 9.

Robert Goodwin, Carberry, Man., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1894; died, July 26.

Harry Aloysius Hill, Brooklyn; Long Island College Hospital, Brooklyn, 1898; aged 51; died, June 23, of heart disease.

Gaetano Velardi, Brooklyn; University of Naples, Italy, 1893; aged 59; died, September 29, of chronic myocarditis.

John Orr Stewart ✠ Cedarville, Ohio; Miami Medical College, Cincinnati, 1883; aged 69; died, September 27.

John William Wright, Collinsville, Okla.; Eclectic Medical Institute, Cincinnati, 1890; aged 66; died, August 30.

CORRECTION

Dr. Sluder's Alma Mater.—THE JOURNAL, October 20, noted in the obituary of Dr. Greenfield Sluder that he graduated from the Medical Department of St. Louis University in 1888, and later for many years served his alma mater in various teaching positions, which were indicated. It should have been stated that Dr. Sluder was a graduate of St. Louis Medical College, an independent institution, which, in 1891, became the medical department of Washington University, and that the positions which Dr. Sluder filled were on the faculty of the Washington University School of Medicine, where he was for so long one of its prominent members.

Correspondence

AUSPICES OF HEALTH DEMONSTRATIONS

To the Editor:—There appears to exist a considerable misunderstanding as to the auspices under which the various health demonstrations in the United States have been conducted. This misunderstanding appears to prevail not only among the general public but to some extent among the medical profession and through the public health field. Published statements have recently appeared to the effect that the health demonstration in Mansfield, Ohio, completed two or three years ago, was financed and directed by the Commonwealth Fund. At the recent meeting of the American Public Health Association in Chicago, the inaccurate statement was made by one of the speakers that the demonstrations of the Commonwealth Fund are operated by the American Child Health Association. It therefore seems worth while in the interest of clarity to make the following statement:

The Child Health Demonstration Committee of the Commonwealth Fund has financed and conducted a health demonstration in Fargo, N. D. This demonstration was completed, Dec. 31, 1927. The same committee of the Fund has also conducted demonstrations in Clarke County, Ga.; in Rutherford County, Tenn., and in Marion County, Ore. The first two of these will be completed, Dec. 31, 1928. The Marion County demonstration will continue until the conclusion of the five year period, as agreed on. The Commonwealth Fund is responsible, and exclusively responsible, for the policies adopted in the operation of the demonstrations named. It is not responsible for any other health demonstration whatever and has never had any connection, financial or other, with any other health demonstration.

BARRY C. SMITH, New York.
Director, the Commonwealth Fund.

FAMILIES OF PHYSICIANS

To the Editor:—The occurrence of physicians in three or more successive generations is surely rare enough to deserve notice, and in a recent number of THE JOURNAL mention is made of a Dr. Darling in four generations.

In my own lineage, which runs back to Thomas Fox of Concord, Mass. (elected freeman of the Massachusetts Colony in 1644) there have been at least twenty-four physicians. The first one, Dr. Jonathan Fox (1754-1782) of Dracut, Mass. (of the fifth generation), had a grandson, Dr. John Fox (1813-1882) of Jaffrey, N. H. Others have had sons or nephews in the same profession but there does not appear to have been three physicians in successive generations.

Dr. John Fox (1781-1853) of Wallingford, Vt., who was in the seventh generation from another Thomas Fox of Cambridge, Mass., had two sons in the same profession, Dr. William C. Fox (1811-1880) of Wallingford and Dr. George Herbert Fox (1830-) of Rutland, Vt. His nephew, Dr. George Marshall Fox (1829-1909) of La Grange, Ill., has a son, Dr. Charles Marvin Fox, now in practice at San Diego, Calif., and a nephew, Dr. William Yale Fox, who practiced for many years at Taunton, Mass. Another nephew of Dr. John Fox, Dr. Walter Howard Fox, practiced at Hartford, Mich.

Among the descendants of the Rev. William Maine Fox (1762-1859), who came from Ireland in 1833, there have been ten or more physicians, mostly in the state of Wisconsin. Dr. Philip Fox (1840-) of Madison had two sons, Dr. George William Fox and Dr. Philip Reginald Fox. A brother, Dr. William Fox (1844-1897), of Milwaukee, also had two sons, Dr. William Edward Fox and Dr. Philip Angus Fox, while a third brother, Dr. George H. Fox (1846-1921), of Oregon, Wis., has a son, Dr. Paul Allen Fox, of Beloit. Certainly

these are notably medical families even if three generations in succession are not represented.

But this is certainly the case among the many physicians who are descended from Jacob Fox (Fuchs) of Bucks County, Pa., who came from the Palatinate in Germany about 1773 and is buried in Tinicum Township. Through his son George we find the late Dr. Asa L. Fox and son Dr. Ralph Deems Fox of Bloomington, Ill. Through his son David we find the Rev. Alfred J. Fox, M.D., who was both a preacher and a physician. The latter had three medical sons, the late Dr. Albert Cullen Fox and Dr. John Francke Fox of Virginia, and Dr. Claude Porterfield Fox of Tennessee, while the latter has a son, Dr. C. P. Fox, Jr., which makes three physicians in successive generations. It may be added that the Rev. Michael Leonard Fox, M.D., another preacher as well as practitioner, and his son, Dr. Thomas Israel Fox of North Carolina, Dr. Millard Fillmore Fox and his son, Dr. Norman Albright Fox of North Carolina, Dr. Gilbert Graham Fox of Pennsylvania and his cousins, Dr. Raymond H. Fox of Oklahoma and Dr. Paul Samuel Fox of New Mexico, and also Dr. Earl W. Fox of Idaho are all in like manner descended from the original Jacob.

I am preparing to publish "The Forefathers and Families of over One Hundred American Physicians Named Fox." Many have apparently taken pleasure in assisting me in this work; but there are a few who are perhaps ashamed of their ancestry, and getting family information from such is like pulling teeth.

GEORGE HENRY FOX, M.D.,
10 East Fifty-Eighth Street, New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

NITROUS OXIDE-OXYGEN ANESTHESIA AT HIGH ALTITUDES

To the Editor:—I am considering the purchase of a McKesson gas-oxygen anesthetic apparatus for use here in Mexico City. As far as I can determine there are few of these machines in use here, the general opinion being that the use of nitrous oxide for anesthetic purposes is dangerous at this altitude—between 7,000 and 8,000 feet above the level of the sea. What I wish to know is whether nitrous oxide and oxygen, as administered in a machine of the McKesson type, is really dangerous or even not practical for anesthetic purposes at the altitude of Mexico City.

GREENSHAW-HARETER, M.D., Mexico, D. F.

ANSWER.—For many years, nitrous oxide-oxygen anesthesia has been successfully used in the high altitudes of the Rocky Mountain region of the United States, in some places higher than Mexico City. On account of the altitude, this form of anesthesia is not only safe but slightly easier of administration than in lower altitudes. This may be explained by the fact that general anesthesia is, in part, a mechanism of reducing the oxygen metabolism, reducing the oxygen tension in the tissues, which at high altitudes is more easily accomplished than at lower levels. Unlike ether or chloroform when administered on an open mask, permitting very rapid escape by vaporization and dilution of the vapor with air, nitrous oxide-oxygen is given through an air-tight closed inhaler, thus preventing the admixture with air and so eliminating this influence of low barometric pressures.

ROENTGEN RAY IN TREATMENT OF TRACHEO-BRONCHIAL LYMPHADENITIS

To the Editor:—What x-ray dosage would you use in the treatment of a marked tracheobronchial lymphadenitis? Please do not publish my name.

M.D., Illinois.

ANSWER.—Small doses of x-rays should be used in the treatment of marked tracheobronchial lymphadenitis. A technic should be formulated giving a large absorption coefficient in the region of the hilum. The patient may be treated through two large fields, one front and one back. Small doses are advisable. There is apt to be an exacerbation of symptoms immediately following irradiation, such as fulness in the chest and difficulty in breathing. If the dose is large, these symptoms will be greatly increased. As a general rule a dosage may be advised with the following factors: 105 kilovolt peak; 38 cm. target-skin distance; 5 milliamperes; 4 mm. of aluminum filter for five minutes, to be given over anterior and posterior chest, and to be repeated in a week. These factors must be modified to meet each case.

TREATMENT OF PREECLAMPTIC TOXEMIA

To the Editor:—What is the best treatment for a seven and one-half months primipara whose urine contains four plus albumin and casts and who has marked general edema without rise in temperature or convulsive manifestations?

DAVID KIMBERLY, M.D., Hot Springs, N. C.

ANSWER.—The information given is insufficient, chiefly because of the absence of such important data as the blood pressure, amount of urine excreted daily, symptoms such as headache, constipation and visual disturbances, and a history of nephritis if this is known.

The following treatment is suggested in the belief that the patient has preeclamptic toxemia or nephritic toxemia. The patient should be put to bed and given a low protein and salt-free diet. Intestinal elimination should be encouraged by giving saline cathartics. Diuresis may be stimulated by giving ammonium chloride up to 10 Gm. daily, but rest in bed and the low protein, salt-free diet helps diuresis. Magnesium sulphate should be given either intravenously (20 cc. of a 10 per cent solution) or intramuscularly. This may be repeated frequently. Other sedatives, such as sodium bromide or phenobarbital sodium, may also be given. Dextrose should be given by mouth, subcutaneously, intravenously or by rectum. The blood pressure should be taken at least twice daily, and the fluid intake should be estimated and the urine output measured daily. A specimen of urine should be examined daily for albumin, casts, bile, acetone and diacetic acid. If the patient improves, the strictness of this regimen is diminished gradually but the patient must be kept under close observation until after the child is delivered. Even when a patient apparently recovers completely during pregnancy, the toxemia may return. If there is no improvement in the patient's condition in spite of the treatment outlined, it is best to have the patient in a hospital and to terminate the pregnancy, especially as the child in this case is viable. The patient may have a chronic nephritis and delay will almost certainly aggravate the condition. For the induction of labor medicinal measures such as castor oil, quinine and solution of pituitary should first be tried. If these are unsuccessful, rupture of the membranes, or insertion of a bag may be tried. If a cesarean section is performed, local anesthesia should be used. All inhalation anesthetics increase the toxemia to some extent; hence such anesthetics should be avoided when delivering patients who have toxemia, regardless of the method of delivery.

Should convulsions occur, the condition is much more serious. Labor often begins spontaneously. Even in a hospital, unless one is skilled in obstetrics, conservative treatment yields the best results in the treatment of eclampsia. In addition to the treatment outlined, morphine should be given in large doses. If the patient cannot be treated in a hospital, it is best not to induce labor but to treat her conservatively.

VALUE OF PERTUSSIS VACCINE

To the Editor:—A mother with a baby, aged 9 months, was recently in a district where there are many cases of pertussis. She does not know for certain that her child was directly exposed, although there is great likelihood, as riding on street cars in that district would certainly bring her child in contact with the disease. At present the child is suffering with a light nasal infection contracted by exposure on the train coming home. The time since the possible exposure is now two weeks. Is there anything that can be done to prevent the child from taking pertussis? Would pertussis vaccine be advisable? Please omit my name.

M.D., Indiana.

ANSWER.—Whooping cough is one of the most contagious of the diseases affecting young children and infants. The disease is spread by droplets of moisture diffused by sneezing and coughing for approximately 5 feet from the patient. The first symptoms of the disease are nasal discharge, sneezing and coughing. These do not differ from an ordinary cold. Their development is gradual and it is difficult to say exactly how soon after exposure they develop. However, if sixteen days have passed without any of these symptoms having developed, it is safe to say that the child has escaped.

There is no positive prevention of whooping cough. Serum from convalescent individuals has been used, but its use has not been extensive and in practice it is not often practical. Vaccine made from stock cultures has been used with a great variety

of success. Certainly as used it does not prevent all cases, nor does it cure a great percentage of those who have contracted the disease. Its use is not harmful so far as we know and the reactions are slight, if any. For this reason it may seem desirable at times to use them even though results may not be encouraging. In other words, it is our only present means of direct prevention and treatment.

SPEECH DIFFICULTY FOLLOWING TONSILLECTOMY

To the Editor:—Last year I operated on a woman, removing chronically infected tonsils that were very difficult to get out. She had a rather severe sore throat for about a week and then got along all right. She now comes complaining of difficulty in talking and swallowing. She has a rather extensive contraction of the throat, the pillars being practically gone and the soft palate stretched taut across the roof of the mouth. I did not do a Wassermann test but there is no history of syphilis. Can you tell me the cause or causes for this? Is it a rare thing? What is the remedy, if any? If they should institute suit for damages, is there anything in the literature to show the frequency of this condition? I shall be very grateful for any advice or suggestions you can give me, also for any literature you can cite me on this kind of trouble.

M.D., Washington.

ANSWER.—No matter how carefully the tonsillectomy is performed, some cases show more scar tissue and more contractions than others, so that it is often not at all the fault of the operator. If, however, a considerable portion of the pillars, or of the soft palate itself is removed, considerable change in the voice may result, and the patient may complain of a feeling of tension in the throat. If distortion of the soft palate or an atresia of the pharynx occurs, there will be changes in part at least of the functions of the throat. The following references in the literature may be of assistance:

Levbarg, J. J.: Nasality, a Common Condition After Tonsil and Adenoid Operations, *M. Times*, New York **54**: 54, 1926.
Trotter, H. R.: Case of Atresia of Pharynx, *Buffalo General Hospital* 5: 59 (Dec.) 1927.
Jacobson, C.: Complications Attending Operations on Palatal and Pharyngeal Tonsils, *Acta Otolaryng.* 10: 568 1927.
Baratoux: Consequences of Palatal Injuries in Course of Tonsil Operations, *J. de méd. de Paris* **61**: 231 (March) 1927.
Miller, C. C.: The Importance of the Tonsil Capsule in Preserving Anatomical Relations of the Palatal Structure, *M. Times*, New York **54**: 115, 1927.
Lott, H. H.: Complications Following Tonsillectomy: Observations Based on Two Thousand Cases, *Atlantic M. J.* **29**: 387 (March) 1926.
Love, J. M.: Dangers of Tonsillectomy, *U. S. Vet. Bur. M. Bull.* **4**: 331 (April) 1928.

BILIRUBIN AND LIVER FUNCTION TESTS

To the Editor:—Please inform me concerning the (1) van den Bergh test; (2) icterus index, and (3) hemoclastic crisis. What significance is attached to them in gallbladder surgery?

M.D., Missouri.

ANSWER.—1. The van den Bergh test is a test for bilirubin in the blood. It is a modification of Ehrlich's diazoreaction. It is resorted to in jaundice cases to determine whether the jaundice is obstructive or nonobstructive. It may give an immediate direct reaction, a delayed direct reaction or a biphasic direct reaction. It may also be modified to give an indirect reaction.

The reagent consists of a mixture of two solutions and is made as follows:

Solution 1. Sulphanilic acid, 1 Gm.; concentrated hydrochloric acid, 15 cc.; sufficient water to make 1,000 cc.
Solution 2. Sodium nitrite, 0.5 Gm.; distilled water, 100 cc.

The solutions are mixed in the following proportions: 25 cc. of solution 1 with 0.75 cc. of solution 2. The mixture must be freshly made for the test, although stock solutions may be used.

The direct test is carried out as follows: Dilute 1 cc. of serum, obtained by centrifugation from fresh blood, with 2 cc. of distilled water and add an equal volume of the reagent. A bluish violet color beginning immediately and becoming maximal in from ten to thirty seconds is called an immediate direct reaction, indicating the presence of uncombined bilirubin and therefore the existence of mechanical obstructive jaundice, as occurs in cholangeitis. A reddish coloration beginning after one to fifteen minutes and gradually deepening to a violet is called a delayed direct reaction, indicating impaired liver function, as occurs in acute yellow atrophy. A reddish color which appears at once and deepens to a violet is called a biphasic direct reaction, indicating both an obstructive jaundice and an impaired liver function.

The indirect test is carried out as follows: To 0.5 cc. of serum add 1 cc. of 95 per cent alcohol and centrifugate. Then to 1 cc. of the supernatant fluid add an equal volume of the reagent. A violet red color appears at once if positive and is due to bilirubin fixed to the blood protein, pointing to hemolytic jaundice.

The direct test is only qualitative. The indirect test may be made quantitative as follows: To 1 cc. of serum in a 15 cc. graduated centrifuge tube add 0.5 cc. of the reagent. After a minute or two add 2.5 cc. of 95 per cent alcohol and 1 cc. of saturated solution of ammonium sulphate. Mix well and centrifugate. The quantity of supernatant fluid is read on the graduations of the tube and the dilution (approximately 1 in 3) of the bilirubin contained in the 1 cc. of serum is thus directly obtained. (In calculation, this is the dilution of the unknown.) The alcoholic solution (the unknown) is then compared with a standard solution in a colorimeter and the amount of bilirubin computed as follows:

$$\frac{\text{Standard}}{\text{Unknown}} \times \text{Dilution of unknown} \times 5 \text{ equals mg. of bilirubin per liter of serum}$$

The standard is made as follows:

Solution 1.	Ammonium ferric alum	0.1508	Gm.
	Concentrated hydrochloric acid	50.0	cc.
	Distilled water, q. s. ad	250.0	cc.
	(Keeps indefinitely.)		
Solution 2.	Of solution 1	10.0	cc.
	Concentrated hydrochloric acid	25.0	cc.
	Distilled water, q. s. ad	250.0	cc.
	(Keeps about one month.)		

Standard, which is made fresh daily.

Of solution 2	3.0	cc.
10% ammonium thiocyanate or 20% potassium thiocyanate	3.0	cc.
Ether	12.0	cc.

Shake the standard thoroughly. The ether extracts the color from the solution and forms a supernatant layer which may be used in colorimetric comparison. The standard matches in color a dilution of 5 mg. of bilirubin per liter of serum. The normal amount of bilirubin is from 1 to 3 mg. per liter of serum. Clinical jaundice is present with about 18 mg. As will be explained later, icterus index figures differ from these, but they are close enough for the two to be compared in making the diagnosis of biliary disease.

2. Icterus index is a term that was coined to accompany a numerical figure in expressing the amount of bilirubin in the blood serum. There is normally a small amount in the blood serum—enough to give a normal index of from 4 to 6. It is much higher in diseases that affect the biliary system but must be above 15 before it is characterized by clinical (visible) jaundice. Thus the index serves as a measure of latent icterus as well as of clinical icterus. The zone of latent icterus lies between the indexes of 6 and 16. It varies in diseases that affect the cellular elements of the blood, as in the anemias. It has been found to be higher than normal in pernicious anemia, and lower than normal in the secondary anemias. Although the chemistry of the matter is not fully known, bilirubin is thought to be an end-product of the metabolism of hemoglobin. As such it is deposited in the skin, giving the yellow color that is diagnostic of jaundice.

The technic of the determination of the icterus index, as given by Dr. Alice R. Bernheim (THE JOURNAL, Jan. 26, 1924, p. 291) is as follows: Three or four cubic centimeters of fresh blood is allowed to clot and is then centrifugated. The supernatant serum is removed with a pipet and compared in a Bock-Benedict or Duboscq colorimeter with an arbitrary standard of potassium dichromate solution (0.05 Gm. to 500 cc. of distilled water). The reading is taken at the point on the scale at which the serum and standard match. (The standard solution is lighter in color than serum.) The standard number, 15, is then divided by the scale reading, and the quotient is the icterus index. For example, if the scale reading is 3, the index is 5. If the color of the serum is too deep, it is necessary to dilute it with a 0.9 sodium chloride solution. The quotient is then multiplied by the number of dilutions. For example: if the number of dilutions is 10, the index in the foregoing instance would be 50. The deeper the color of the serum, the higher the index.

The index is probably of greatest value in diseases of the gallbladder. In such diseases, in which there are symptoms but no jaundice, the blood will show an increase in bilirubin because of a disordered biliary system. This will be most noticeable in inflammatory and malignant diseases. In fact, cholelithiasis may be present with no change from the normal in the icterus index.

The indirect van den Bergh and the icterus index tests are of some value in the differential diagnosis of gallbladder disease from appendicitis and peptic ulcer in that they are practically always normal in these two conditions where there is no liver or gallbladder involvement. Thus they may serve as leads in eliminating them, but they can hardly be considered definite enough evidence to swing the balance in favor of an operation on the gallbladder.

3. The term hemoclastic crisis is applied to a transitory leukopenia which follows anaphylactic shock due to the presence of toxic protein-split products in the blood stream. It apparently results from a failure of the liver to detoxicate these modified proteins, and thus suggests a disordered function of the liver. It is accompanied by a relative lymphocytosis, a lowered blood pressure, and changes in blood coagulability. The usual test is carried out as follows: A leukocyte count is made after a fast of at least five hours; the subject is then given 200 cc. of milk, and the leukocyte count is repeated at half-hour intervals. If it is decreased from the original count for from one to three hours after the milk is taken, the test is positive. It has been observed as positive in inflammatory, malignant and cirrhotic diseases of the liver, and in diseases of the biliary system and gallbladder, in heart diseases with chronic passive congestion of the liver, in Banti's disease, and in lymphatic leukemia. The results of the tests have been variable, however, and there is still considerable uncertainty as to their full significance. It seems safe to assume that the leukopenia is an index of a disordered liver, although some investigators question its value in the diagnosis of disease of the liver. It has no practical significance in gallbladder surgery.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS—Eclectic: Little Rock, Nov. 13-14. Sec., Dr. C. E. Laws, 803½ Garrison Ave., Fort Smith, Ark.

ARKANSAS—Homeo: Place not decided, Nov. 13. Sec., Dr. A. A. Pringle, Eureka Springs, Ark.

ARKANSAS—Regular: Little Rock, Nov. 13-14. Sec., Dr. J. W. Walker, Fayetteville, Ark.

CONNECTICUT—Homeopathic: New Haven, Nov. 13. Sec., Dr. E. C. M. Hall, 82 Grand Ave., New Haven, Conn.

CONNECTICUT—Regular: Hartford, Nov. 13-14. Sec., Dr. Robert L. Rowley, 79 Elm St., Hartford, Conn.

DELAWARE: Wilmington, Dec. 11, 1928. Sec., Dr. Harold L. Springer, 1013 Washington St., Wilmington, Del.

FLORIDA: Marianna, Nov. 12-13. Sec., Dr. W. M. Rowlett, 812 Citizens Bank Bldg., Tampa, Fla.

LOUISIANA—Homeopathic: New Orleans, Nov. 6. Sec., Dr. F. H. Hardenstein, 1714 Pere Marquette Bldg., New Orleans, La.

MAINE: Portland, Nov. 13-14. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland, Me.

MARYLAND: Baltimore, Dec. 11-14, 1928. Sec., Dr. Harry M. Fitzhugh, 1211 Cathedral St., Baltimore, Md.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Dr. Frank M. Vaughan, 144 State House, Boston, Mass.

NEBRASKA—REGULAR: Lincoln, Nov. 26-28. Dir., Mrs. Clark Perkins, Bureau of Examining Boards, Dept. of Public Welfare, Lincoln, Neb.

NEVADA: Carson City, Nov. 5-7. Sec., Dr. Edw. E. Hamer, Carson City, Nevada.

OHIO: Columbus, Dec. 5-7. Sec., Dr. H. M. Platter, Ohio State Savings Bldg., 3rd and Gay Sts., Columbus, Ohio.

PHILIPPINE ISLANDS: Manila, Nov. 13. Sec., Dr. Jose V. Gloria, 341 Ronquillo Station, Cruz, Manila, Philippine Islands.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia, S. C.

TEXAS: Ft. Worth, Nov. 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bank Bldg., Dallas, Texas.

VIRGINIA: Richmond, Dec. 4-7. Sec., Dr. J. W. Preston, State Bd. of Med. Examiners, 720 Shenandoah Life Bldg., Roanoke, Va.

WEST VIRGINIA: Morgantown, Nov. 27. Sec., Dr. W. T. Henshaw, State Health Department, Charleston, W. Va.

WISCONSIN—Basic Science: Milwaukee, Dec. 15, 1928. Sec., Prof. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee, Wis.

Georgia June Examination

Dr. B. T. Wise, secretary of the Georgia State Board of Medical Examiners, reports the written examination held at Atlanta and Augusta, June 7-8, 1928. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. There were 91 candidates examined and all of them passed. Eleven physicians were licensed by reciprocity and 2 by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Emory University School of Medicine	(1928)	85.8,	86.1, 86.4, 86.6, 86.7, 86.8, 87.5, 87.5, 87.7, 87.8, 87.9, 87.9, 88.2, 88.2, 88.3, 88.4, 88.4, 88.5, 88.6, 88.8, 88.9, 88.9, 88.9, 89.1, 89.2, 89.5, 89.7, 89.9, 90, 90.1, 90.2, 90.3, 90.3, 90.5, 90.5, 90.6, 90.6, 90.7, 90.7, 91.6, 91.9, 92, 92.3, 92.4, 92.4, 92.4, 93.3, 93.4, 94.4
University of Georgia Medical Department	(1928)	88,	88.2, 88.3, 88.3, 88.4, 88.6, 88.7, 88.7, 88.8, 88.8, 88.9, 89, 89.1, 89.1, 89.3, 89.4, 89.4, 89.5, 89.6, 89.6, 89.8, 90.1, 90.8, 91.1, 91.3, 91.4, 92.1, 92.1, 92.1, 92.2, 92.2, 92.7, 93.2, 94, 94.2, 96.2
Harvard Medical School	(1926)	90.3,	(1927) 91.0
Medical College of the State of South Carolina			(1927) 88.0
Meharry Medical College	(1908)	80.8,	(1926) 86.4
University of Manitoba Faculty of Medicine			(1919) 84.2

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1926)	N. Carolina
University of Illinois College of Medicine		(1902)	Alabama
Johns Hopkins University School of Medicine		(1923)	Minnesota
University of Minnesota Medical School		(1899)	Minnesota
American Medical College		(1913)	Tennessee
Eclectic Medical College		(1927)	Ohio
Medical College of the State of South Carolina		(1927)	N. Car., S. Car.
Meharry Medical College		(1924)	Tennessee
Medical College of Virginia		(1916)	S. Carolina
University of Virginia Department of Medicine		(1923)	Minnesota

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement from
Harvard Medical School		(1923)	N. B. M. Ex.
University of Virginia Department of Medicine		(1924)	N. B. M. Ex.

Florida June Examination

Dr. William M. Rowlett, secretary of the Florida State Board of Medical Examiners, reports the written examination held at Jacksonville, June 11-12, 1928. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Of the 46 candidates examined, 44 passed and 2 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Howard University School of Medicine	(1926)	83,	(1927) 86
Emory University School of Medicine			(1927) 81, (1928) 84, 86, 87, 87, 87, 88, 91, 91, 91
University of Georgia Medical Department			(1927) 85, 89, (1928) 81, 84
Bennett Medical College	(1911)	82,	(1912) 85
Chicago College of Medicine			(1909) 82
Rush Medical College			(1916) 83
University of Illinois College of Medicine			(1909) 80
Indiana University School of Medicine			(1927) 90
Medical Department University of Indianapolis			(1898) 81
Kentucky School of Medicine			(1898) 78
Tulane University of Louisiana School of Medicine			(1927) 81, 93
University of Md. Sch. of Med. & Coll. of P. & S.			(1928) 87
College of Physicians and Surgeons, Boston			(1914) 86
Harvard University Medical School			(1922) 92
University of Michigan Medical School			(1906) 88
St. Louis University School of Medicine	(1926)	87,	(1928) 88, 88
University Medical College of Kansas City			(1898) 75
Washington University School of Medicine			(1903) 86
Columbia Univ. College of Phys. and Surgs.	(1896)	84,	(1907) 87
Medico-Chirurgical College of Philadelphia	(1896)	82,	(1899) 81
Medical College of the State of South Carolina			(1927) 86, 87
University of Tennessee College of Medicine			(1928) 86
Marquette University School of Medicine			(1915) 84
University of Havana Medical Faculty			(1926)* 75

College	FAILED	Year Grad.	Per Cent
Starling Medical College		(1880)	44
University of Havana Medical Faculty		(1925)	68

* Verification of graduation in process.

Louisiana June Examination

Dr. L. J. Menville, president of the Louisiana Board of Medical Examiners, reports the written examination held at New Orleans, June 14-16, 1928. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. There were 76 candidates examined and all of them passed. Five physicians were licensed by reciprocity with other states. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine		(1927)	91.0
Georgetown University School of Medicine		(1915)	81.6
Northwestern University Medical School		(1928)	86.2
Indiana University School of Medicine		(1917)	83.8
University of Louisville School of Medicine		(1927)	88.2
Tulane University of Louisiana School of Medicine		(1921)	90.8, (1928) 82.9, 84.2, 85.3, 86, 86.2, 86.6, 86.6, 86.7, 86.8, 86.8, 86.9, 86.9, 86.9, 87.3, 87.3, 87.3, 87.3, 87.3, 87.4, 87.5, 87.6, 87.7, 87.7, 87.9, 88, 88, 88.1, 88.3, 88.4, 88.4, 88.5, 88.5, 88.6, 88.6, 88.8, 88.8, 88.9, 88.9, 88.9, 89, 89, 89.2, 89.2, 89.2, 89.3, 89.3, 89.5, 89.6, 89.7, 89.9, 90, 90.1, 90.1, 90.2, 90.2, 90.4, 90.5, 90.5, 90.5, 90.8, 91, 91.1, 91.5, 91.8, 92.2
Johns Hopkins University School of Medicine		(1924)	87.7
Jefferson Medical College of Philadelphia		(1927)	93.0
Meharry Medical College	(1926)	79.5,	(1927) 75.3
University of Tennessee College of Medicine			(1927) 85.6

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Louisville School of Medicine		(1916)	Kentucky
Tulane University of Louisiana School of Medicine		(1920)	Alabama
University of Tennessee College of Medicine		(1914), (1917)	Tennessee
McGill University Faculty of Medicine		(1923)	Dist. Colum.

Book Notices

AIDS TO EMBRYOLOGY. By Richard H. Hunter, M.D., M.Ch., Lecturer in Anatomy, Queen's University, Belfast. Cloth. Price, $1.50. Pp. 160, with 30 illustrations. New York: William Wood & Company, 1928.

The object of this booklet, as stated in the preface, is "to give in as short a space as possible such an account of the more important changes which occur in human development that the student may learn to appreciate the signification of the commoner abnormalities which are found in the dissecting room, and of those anomalies of development which are seen in the obstetrical wards." The ground usually covered by medical courses in embryology is presented on the basis of systems of organs. It would serve well as an examination aid to students who have come into personal contact with embryos. Without such contact, embryologic study is worthless as a discipline and of little or no practical value.

MONGOLISM. A Study of the Physical and Mental Characteristics of Mongolian Imbeciles. By Kate Brousseau, Docteur de l'Université de Paris, Professor of Psychology Mills College, California. Revised by H. G. Brainerd, M.D., Superintendent County Hospital, Los Angeles, California. Cloth. Price, $4.50. Pp. 210, with illustrations. Baltimore: Williams & Wilkins Company, 1928.

Mongolism lends itself readily to monographic treatment. Here is a definite picture of peculiar children who resemble one another so strikingly that they may be mistaken for brothers and sisters. Physically and psychically these unfortunate, unfinished or badly finished children are monotonously alike. A complete picture of one fits all. The prognosis is definite and the treatment is definitely ineffective. Brousseau and Brainerd have concisely stated the case for mongolism from historical considerations to therapy. However, the history of mongolism does not date from the earliest medical writings, the description of undoubted mongols by Seguin in 1843 which the authors record and Langdon Down's first segregation of these patients in 1866. The history of recorded mongols truly dates from the painters. A century before, at least two artists, a Dutchman and an Englishman, faithfully reproduced mongol children on their canvases. Any modern analysis of the etiology of mongolism must reduce itself to the pertinent observations of van der Scheer that mongolism is essentially a malformation, "a specific pathologic product," with a rather definite pathogenesis, the injury to the fetal development occurring about the sixth month of intra-uterine existence. This thesis demands statement in any discussion on mongolism. On the other hand, the authors bring adequate data to bear on the explosion of the theory of reversion to primitive types by quoting cases in the negro and Mongolian races from the literature. That they have enjoyed a close contact and wide experience with these cases is manifested in their intelligent discussion of the differential diagnosis. They, too, have seen patients who resemble cretins as closely as mongols. They lend credence to the reports of cases of congenital syphilis simulating mongols. As a matter of fact, certain cretins and certain patients with congenital syphilis may belong to the category of mongolism if van der Scheer's thesis is sufficiently appreciated that mongolism is a general malformation produced by faulty implantation of the ovum because of disturbances of the uterine mucosa from general or local disease. Cretinism or congenital deficiency of the thyroid may simply represent a concomitant malformation like the cardiac, digital or ocular disturbances in mongolism. The picture of cretinism may smear itself over the picture of mongolism. Finally and most important from a practical standpoint, the authors may be accused of an omission from which they may be excused. The institutional student is served only well marked cases, helpless patients, textbook pictures for his daily fare. A complete monograph paralleling the authors' comprehensive study might be written describing the unrecognized cases, the milder, subtler forms. There are innumerable children thrown among the odds and ends of the misfit who properly belong to the classification of mongols, physically and mentally. A child of this type is not seen in the institutions for the wofully inadequate. He is carried along by his family, who views him at worst as a retardation of a sort. His physician finds him somewhat simple, missing the woods for the trees. Only recently in a large hospital, well trained interns rested quite placid with the diagnoses of athrepsia in one and congenital malformation of the heart in another infant, both of whom were mongols. Mongolism is of great importance economically. Mongols constitute from 5 to 15 per cent of all cases in institutions for the feebleminded. Since the actual recognition of this condition sixty odd years ago, it has emerged from the darkness. The story of mongolism needs periodic reiteration. Monographs like that of Brousseau and Brainerd will stimulate interest in the subject.

HISTLOGISCHER ATLAS VON ZUPFPRÄPARATEN UNFIXIERTER MENSCHLICHER ORGANE UND GEWEBE. Von Dr. phil. et med. Hanns Plenk, Privatdozent fur Histologie an der Universität Wien. Paper. Price, 6 marks. Pp. 60, with 77 illustrations. Vienna: Julius Springer, 1928.

Seventy-five years ago almost the only available histologic methods were teasing and maceration. Today few histologists appreciate their importance as methods of investigation, although it is generally recognized that the study of unstained preparations is of the utmost value in training eye and hand for accurate microscopic observation. Dr. Plenk has written a manual for the Vienna course which is based on teased material from autopsies, and his descriptions are accurate and detailed. The admirable illustrations are from his own hand, which is significant because only the understanding eye can see the important details in such preparations. While the individual cells in human tissues are usually larger than in those of the ordinary laboratory mammals, there are many advantages in using perfectly fresh tissues for teasing and these descriptions apply with little modification to any mammalian material. A course such as is here outlined can be most profitably pursued by students who have already some knowledge of the tissues and organs to be studied.

PREVENTIVE MEDICINE. By Mark F. Boyd, M.D., M.S., C.P.H. Third edition. Cloth. Price, $4.50 net. Pp. 475, with 151 illustrations. Philadelphia: W. B. Saunders Company, 1928.

This edition has been revised to include some recent material. The book remains substantially the same in its aims and contents. It is designed primarily for medical students, who will find in it relatively brief treatments of all phases of public health work. Much of the statistical material has not been brought down to date. While older statistics might well be used to illustrate the fundamental principles of the subject, it would seem desirable to include in a 1928 edition charts that contain statistics since 1910. This is true of the diphtheria curves on pages 437 and 438.

REPORT ON AN OUTBREAK OF PARATYPHOID FEVER IN HERTFORDSHIRE. By W. Vernon Shaw, O.B.E., M.A., M.D. Ministry of Health. Reports on Public Health and Medical Subjects, No. 53. Paper. Price, 3d. net. Pp. 16. London: His Majesty's Stationery Office, 1928.

In an epidemic of 166 cases due to milk contaminated on a dairy farm by one or more persons suffering from paratyphoid, the symptoms were typhoidal in nature and a bacillus of the Schottmüller type was isolated. The outbreak was not characterized by anything novel or distinctive.

UEBER WEIBLICHE SEXUALHORMONE. Von Prof. Dr. M. Kochmann. Paper. Price, 2 marks. Pp. 173-195, with 12 illustrations. Leipzig: Curt Kabitzsch, 1928.

This is a brief but, on the whole, good summary of the present status of ovarian hormones, with references to various therapeutic results.

HANDBUCH DER INNEREN SEKRETION. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Herausgegeben von Dr. Max Hirsch. Lieferung 4. Band II. Paper. Price, 22 marks. Pp. 927-1142, with 22 illustrations. Leipzig: Curt Kabitzsch, 1928.

This section of a large work contains a chapter on the physiology of the ovaries by Prof. L. Adler of Vienna, and a chapter on the physiology of pancreatic secretion (internal) by Prof. M. Rosenberg of Berlin. The informed and critical reader finishes the perusal of these chapters with the feeling that the authors, on the whole, have done good work in their comprehensive and judicious summary of the facts and theories in these important fields. Dr. Adler adds four pages of literature references to his chapter on the ovaries. Dr. Rosenberg cites 710 references to his chapter on insulin and pancreatic functions. These chapters are well up to the standard of the previous sections of this work.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

BLOOD AND URINE CHEMISTRY. By R. B. H. Gradwohl, M.D., Director of the Gradwohl Laboratories, St. Louis, and Ida E. Gradwohl, A.B., Instructor in the Gradwohl School of Laboratory Technic, St. Louis. Cloth. Price, $10. Pp. 542, with 121 illustrations. St. Louis: C. V. Mosby Company, 1928.

Thoroughly revised guide to laboratory practice based on extensive experience.

A TEXT-BOOK OF SURGERY FOR STUDENTS AND PHYSICIANS. By W. Wayne Babcock, A.M., M.D., F.A.C.S., Professor of Surgery and of Clinical Surgery in The Temple University. Cloth. Price, $10 net. Pp. 1367, with 1055 illustrations. Philadelphia: W. B. Saunders Company, 1928.

Another contribution to American surgical textbooks, handsomely illustrated.

HUMAN PHYSIOLOGY. A Text-Book for High Schools and Colleges. By Percy Goldthwait Stiles, Assistant Professor of Physiology in Harvard University. Fifth edition. Cloth. Price, $2.25 net. Pp. 444, with 82 illustrations. Philadelphia: W. B. Saunders Company, 1928.

New edition of a handbook suitable for any intelligent reader.

STUDIES ON SCURVY. By Arthur W. Meyer, and Lewis M. McCormick. Stanford University Publications. University Series. Medical Sciences, volume II, number 2. Paper. Price, $1.50. Pp. 107, with illustrations. Stanford University: Stanford University Press, 1928.

Monograph concerning changes in the blood in scurvy.

ESSENTIALS OF PRESCRIPTION WRITING. By Cary Eggleston, M.D., Assistant Professor of Clinical Medicine, Cornell University Medical College. Fourth edition. Cloth. Price, $1.50 net. Pp. 153. Philadelphia: W. B. Saunders Company, 1928.

New edition of a widely used manual brought up to date.

RECENT ADVANCES IN PHYSIOLOGY. By C. Lovatt Evans, D.Sc., M.R.C.S., L.R.C.P., Jodrell Professor of Physiology, University College, London. Third edition. Cloth. Price, $3.50. Pp. 403, with 86 illustrations. Philadelphia: P. Blakiston's Son & Company, 1928.

New edition of summarized knowledge in physiology.

LEHRBUCH DER PHYSIOLOGISCHEN UND PATHOLOGISCHEN CHEMIE IN 75 VORLESUNGEN FÜR STUDIERENDE, ÄRZTE, BIOLOGEN UND CHEMIKER. Zugleich II. völlig neubearbeitete und erweiterte Auflage der „Probleme der physiologischen und pathologischen Chemie." Band II: Stoffwechsellehre. Lieferung 6: Fettstoffwechsel und allgemeiner Stoffwechsel. Von Prof. Dr. Otto Fürth, Vorstand der Abteilung für physiologische Chemie in Physiologischen Institute der Wiener Universität. Paper. Price, 15 marks. Pp. 335-615. Leipzig: F. C. W. Vogel, 1928.

THE RISE AND FALL OF DISEASE IN ILLINOIS. By Isaac D. Rawlings, M.S., M.D., in collaboration with William A. Evans, M.D., D.P.H., Gottfried Koehler, M.D., and Baxter K. Richardson, A.B. Published by the State Department of Public Health in commemoration of its fiftieth anniversary, 1927. Volume II. Cloth. Pp. 493, with illustrations. Springfield: State of Illinois, Department of Public Health, 1928.

GUTARTIGE RIESENZELLGESCHWÜLSTE. Eine vergleichend histologische Untersuchung. Von Privatdozent Dr. A. von Albertini, Prosektor des Pathologischen Institutes, Zurich. Mit einem Vorwort von Prof. Dr. H. v. Meyenburg. Paper. Price, 9 marks. Pp. 76, with 34 illustrations. Leipzig: Georg Thieme, 1928.

BORNA DISEASE AND ENZOOTIC ENCEPHALO-MYELITIS OF SHEEP AND CATTLE. By S. Nicolau, M.D., D.Sc., and I. A. Galloway, B.Sc., M.R.C.V.S. Medical Research Council. Special Report Series, No. 121. Paper. Price, 5s. net. Pp. 90, with illustrations. London: His Majesty's Stationery Office, 1928.

SAINT BARTHOLOMEW'S HOSPITAL REPORTS. Edited by W. McAdam Eccles, Sir Thomas Horder, Bart. K.C.V.O., Ronald G. Canti, W. Langdon Brown, Hon. Treasurer, W. Girling Ball and Geoffrey Evans, Joint Hon. Secretaries. Volume LXI. Cloth. Pp. 260, with illustrations. London: John Murray, 1928.

THE MATERNITY SERVICE REPORT OF THE EAST HARLEM NURSING AND HEALTH DEMONSTRATION. Paper. Price, 25 cents. Pp. 32. New York: East Harlem Nursing and Health Demonstration, 1928.

RAD-IMMUNITY. Specific Immunity Developed Through Focal and Systemic Irradiation. By S. Peskind, B.S., M.D. Paper. Price, $3. Pp. 76. Cleveland, 1928.

Medicolegal

Drunkenness and Criminal Responsibility

(Lawson v. Commonwealth (Ky.), 1 S. W. (2d) 1060)

The appellant was found guilty of wilful murder, and his punishment fixed at death. He appealed to the court of appeals of Kentucky. His appeal was based in part on the refusal of the trial judge to instruct the jury that if it believed from the evidence that at the time of the killing the appellant was so drunk or under the influence of intoxicating liquor that he did not possess malice toward his victim or the intent to commit murder, the jury should consider such intoxication as bearing on the question of the intent of the appellant and could not find him guilty of wilful murder. The trial judge gave the usual instruction on murder, manslaughter, reasonable doubt, etc. Affirming the judgment of the trial court, the court of appeals quoted with approval the following rule laid down by it in *Fleenor* v. *Commonwealth*, 298 S. W. 376:

> The rule is well settled that, while the fact of drunkenness in a case like this may be a circumstance showing the absence of malice, it should not be singled out from the other proof, and the jury should not be instructed that it mitigates the offense. One in a state of voluntary intoxication is subject to the same rules of conduct and to the same rules and principles of law that a sober man is.

Quoting from its decision in *Harris* v. *Commonwealth*, 209 S. W. 509, the court, speaking of evidence of drunkenness on the part of the defendant at the time of the commission of the crime, reiterated the rule:

> The true province of such evidence, which is admissible as a part of the res gestae, is to assist the jury in fixing the punishment in accordance with the extent voluntary drunkenness, considered a human frailty, influenced the perpetration of the malicious crime, at death or life imprisonment, but not to rebut malice and reduce the crime to manslaughter.

Limitation of Actions for Personal Injuries

(Bodne v. Austin (Tenn.), 2 S. W. (2d) 100; Bodne v. Austin (Tenn.), 2 S. W. (2d) 104)

The two cases cited were brought by husband and wife on substantially the same basis of fact and can best be considered together. The defendant, a dentist, undertook to extract the teeth of the wife and to make a set for her. After the attempted extraction, according to the allegations of the plaintiffs, the wife suffered great pain and distress, was affected with a serious malady, and became a permanent invalid. Husband and wife expended large sums of money in an effort to ascertain the cause of the wife's illness and to cure it. The cause was finally discovered, namely, that the dentist had broken a jaw tooth and had allowed the gums to heal over the part of it that he had left in the jaw. That part of the tooth was then removed. Separate suits were then brought by husband and wife, alleging negligence and unskilfulness on the part of the dentist, with resulting damage to them. The defendant had undertaken to extract the wife's teeth on or about June 1, 1916. The presence of a part of a tooth in the jaw was discovered, Jan. 5, 1925. Suit was commenced, March 6, 1925. In the trial court the defendant claimed that the suits were barred by the statute of limitation. His plea in each case was sustained, and the plaintiffs thereupon appealed to the supreme court of Tennessee. Two questions were raised: 1. Are these cases governed by the six-year statute of limitations relating to "actions on contracts not otherwise expressly provided for," or by the one-year statute relating to all actions "for injuries to the person"? 2. Did the cause of action arise when the dentist undertook to extract the teeth or when the plaintiffs discovered that a part of a tooth had been allowed to remain in the jaw? In given malpractice cases there may be two independent causes of action, (1) breach of contract and (2) negligence constituting a tort. It is generally conceded that the plaintiff may select between them. The effect of the Tennessee statute, however, said the court, is to limit the bringing of a suit to one year, whenever the action is one to recover damages for injuries to the person. The question whether the action is based on contract or on tort thus becomes nondeterminative in Tennessee. The pertinent inquiry in each case before the court is whether

or not, on the facts alleged, the defendant has inflicted injuries to the person, for which recovery is sought. The purpose in thus limiting the bringing of actions based on injuries to the person may have had reference to the fact that such cases involve the production of evidence that is in its nature particularly difficult to perpetuate, and easy to manufacture or manipulate after a lapse of years. In attempting to fix on the defendant continuing liability so long as a part of a tooth remained in the jaw, it was contended that the defendant carelessly and negligently, on each and every day after the dental operation, permitted the broken tooth to remain unextracted, and carelessly and negligently failed to disclose its presence to the plaintiff's wife. The court pointed out, however, that it was fraudulent concealment of the cause of action that would prevent the running of the statute, and that the plaintiffs had not alleged fraud in the present case or even that the existence of the cause of the wife's ill health was known to the defendant; and the court declined to assume fraud on the part of the defendant to prevent the running of the statute. The continuation of the wife's illness up to and within the period immediately preceding the commencement of the action was nothing more than an aggravation of the legal injury already suffered or inflicted. The plaintiffs did not aver that her injuries developed within the year preceding the commencement of the action, and the court did not know of any authority holding that mere ignorance and failure to discover the existence of the cause of action could prevent the running of the statute of limitations. The judgment of the trial court holding that the suits were barred by the statute of limitations was sustained.

A Railroad Hospital as a Charitable Institution

(Illinois Central R. R. Co. v. Moodie (C. C. A.), 23 Fed. (2d) 902)

The plaintiff, an employee of the Illinois Central Railroad Company, while an inmate of one of the company's hospitals, fell out of his bed, or fell after arising, and fractured his hip. The injury was not discovered for some thirty days or more, when it was too late to set the fracture without a serious operation, and the plaintiff was permanently injured. He sued the company and obtained a judgment. The defendant appealed to the circuit court of appeals of Illinois, seventh circuit. The evidence showed that the defendant maintained a hospital department, with hospitals at various places for the treatment of its employees. The employees contributed 75 cents a month, which was deducted from their pay, to a hospital fund. The hospital fund was segregated from the other funds of the defendant and devoted exclusively to the hospital department and to medical treatment of employees for illness not incurred in their line of duty. The defendant was obligated to contribute to the hospital fund in case of a deficiency, but up to the time when the testimony was given there was a surplus in the fund. If an employee, or a passenger, or a trespasser, was injured on the road, he received medical attention, and for this the company contributed the cost to the hospital fund. Hospitals maintained by the defendant were not operated for profit, though sometimes persons not coming within the classes enumerated were received in them and paid for the service rendered. An employee of the defendant was required to pay extra, if he had a private room. The main contention of the plaintiff was that the defendant, the Illinois Central Railroad Company, had entered into an express contract to furnish him medical, surgical and hospital treatment, and hospital accommodations when needed, and had broken this contract by its failure to furnish competent nurses and physicians and a properly equipped hospital. He attributed his injury to the malpractice of the physicians and nurses employed by the defendant and the failure of the defendant to have in the hospital a portable roentgen-ray machine. The court concluded, however:

> It may be conceded for the purposes of discussion that there was a contract by which defendant agreed to furnish medical treatment and hospitalization to plaintiff, and that the nurses and doctors in charge of plaintiff when he was injured were negligent, but that does not necessarily establish liability in the defendant for the consequent injury.
>
> In the case of *Union Pacific Ry. Co.* v. *Artist* (C. C. A.), 60 F. 365, 23 L. R. A. 581, in a well considered opinion by Judge Sanborn, the rule is stated as follows:
>
> "The rule is that those who furnish hospital accommodations and medical attendance, not for the purpose of making profit thereby, but out of charity, or in the course of the administration of a charitable enterprise, are not liable for the malpractice of the physicians or the negligence of the attendants they employ, but are responsible only for their own want of ordinary care in selecting them."
>
> In that case the facts were practically the same as in this case, and the railroad company was held to come under the designation of a charitable institution for the purpose of fixing liability.

Considering that a portable roentgen-ray machine was available if needed, the court concluded that the fact that the hospital was not equipped with one would not show a failure to furnish the plaintiff with modern and necessary hospital equipment. The judgment of the court below was reversed.

Presumption Against Suicide

(Fidelity Mutual Life Ins. Co. v. Wilson (Ark.) 2 S. W. (2d) 80)

The Fidelity Mutual Life Insurance Company insured the life of one Wilson, in favor of his mother, the appellee. The policy provided for the payment of $1,000 if the insured died from natural causes, and $2,000 if he died from violent and accidental means, except that in case of self-destruction within two years from the date of the policy, whether the insured was sane or insane at the time of such self-destruction, the payment should be equal only to the premiums paid on the policy. Within the two year period, Wilson, after an attack of delirium tremens, was found dead in bed in a hotel, from a gunshot wound through the mouth. The outer door of his room was locked, and the bed had been placed against the other door. The pistol was on the bed about 3 inches from the deceased's right hand. The mother sued, and the insurance company defended on the ground that the insured had committed suicide. The jury returned a verdict in favor of the mother for $2,000. The insurance company appealed. The supreme court of Arkansas pointed out that if death may have resulted from suicide, and the insurer alleges that fact as a defense, the burden is on him to establish the fact, for the law presumes that the insured did not intentionally take his own life. Among the most important things to be considered in determining whether death was caused by suicide are the presence or absence of a motive, physical facts surrounding the death, as the place where the body is found, its position, the presence or absence of powder marks, where death was caused by a pistol, the habits and temperament of the insured, and his environment. The court concluded that in this case the physical facts were not consistent with any reasonable theory either of accidental killing or of being killed by some third person, and that they could be reconciled with no manner of killing except suicide. The case was remanded with directions to enter a judgment against the insurance company in a sum equal only to the premiums paid.

Duty of Physician to Forewarn Patient of Consequences

(Bockoff v. Curtis (Mich.), 217 N. W. 750)

The plaintiff was treated for sciatic neuritis, without relief. He reported to his physician, July 9, that he had been suffering intense pain and threatened to commit suicide if not relieved. The defendant was called in and injected alcohol "into the sciatic nerve in plaintiff's back." Almost total paralysis of the left leg resulted, from which there was a partial recovery. The plaintiff brought suit and a judgment was rendered in his favor. The defendant appealed to the supreme court of Michigan. The plaintiff claimed in effect that, because of the negligent, careless and unskilful manner in which he was treated, he became sicker and was thereby caused and obliged to secure other and further treatment. The trial judge, however, in charging the jury, stated that the plaintiff had "a second theory" on which to base his case, namely, that even though the use of alcohol was good medical practice, the defendant was liable if he did not tell the plaintiff in advance what the consequences would be. He instructed the jury: "You have a right to consider the second theory of the plaintiff, namely, that even though the defendant's treatment was proper and careful, still he may be held liable on the ground that he did not advise the plaintiff in advance of the nature of the treatment and its probable consequences." The defendant and other physicians testified in the course of the trial that the plaintiff was fully informed as to the effects of the injection and consented to it. The defendant in no way admitted that the treatment administered was

improper without consent, although it might fairly be claimed that some of the other physicians called by him did so state. The supreme court found that the "second theory" of the plaintiff, stated by the trial judge, stated a cause of action different from that stated in the declaration on which the case was based, and that the nature of the liability and of the proofs needed to support this second theory were different from those stated in the original declaration. Under the second theory, the court said, the jury was plainly instructed that "even though the defendant's treatment was proper and careful," he might be held liable "if he did not advise the plaintiff in advance of the nature of the treatment and its probable consequences;" and under this instruction the jury might have found for the plaintiff even though it was satisfied that he had not maintained the charge as stated in the declaration. These instructions were given more than three years after the treatment was administered. It was not within the discretion of a trial court to permit an amendment to the declaration which stated a cause of action barred by the statute of limitations. For the error thus committed, judgment was reversed and a new trial ordered.

Exception was taken by the defendant to the following question asked of one of the medical witnesses:

> Now, doctor, state whether or not in your opinion the treatment of alcohol claimed to have been prescribed and used in this case evidenced the exercise of such skill and knowledge upon the part of Dr. Curtis as should have been possessed by physicians in this community in the light of scientific knowledge in July, 1923?

It was urged that the question was not a hypothetical question, but that the witness was permitted to express an opinion on the specific facts which the jury must decide in reaching its verdict. The court concluded, however, that the question was but another way of inquiring whether the treatment was proper, that it was in line with the requirements previously stated by the court, and that it was a proper question to submit to the witness.

Drunkenness Voids Insurance Policy

(Cavannaugh v. North American Union (Mo.) 2 S. W. (2d) 172)

The plaintiff's son was insured by the defendant fraternal beneficiary association for her benefit. A by-law of the association, which constituted a part of the contract, provided that if the insured should be or become a drunkard or use intoxicating liquors or beverages, to the impairment or destruction of his health, his benefit certificate should thereby become void, without notice. The insured died from injuries received in falling, jumping or being thrown from a window, while he was intoxicated. The plaintiff sued to recover the full amount of the policy. The verdict and judgment were in her favor, and the defendant apppealed. The plaintiff construed the condition which voided the insurance if the insured used intoxicating liquors to the impairment or destruction of his health to mean a permanent impairment, and the defendant apparently adopted a similar construction. The St. Louis court of appeals, Missouri, however, held that the impairment contemplated was not necessarily permanent or irremediable, nor the temporary indisposition or disturbance usually resulting from a drunken debauch, but it was the development of disease or the impairment of constitutional vigor. There was evidence showing the drinking habits of the deceased, and one witness had testified that, when he saw the deceased shortly before his death, the deceased was drunk and had the "jimmies" or "willies." A medical witness testified:

> It is very common knowledge, not only scientific but I should say general knowledge, that the excessive drinking of whisky will produce a condition of the body which is commonly known as the "jimmies" or the "willies," known to the doctors as "delirium tremens." . . . "Delirium tremens" or "willies" or "snakes" is a permanent impairment because if sufficient amount of alcohol to certain susceptible individuals will cause symptoms which are so severe as to be classified as "delirium tremens," there is a permanent injury to the cells of the nervous system, and I mean by that the cells of the brain and spinal cord and other nerves and, of course, the same thing is true in the cells of the liver as well, as many of them are killed off and replaced by scarred tissues. . . . Delirium tremens cannot be caused by anything other than drunkenness.

The court found that there was evidence tending to show a permanent impairment of the insured's health. Objection was raised because the terms "jimmies," "willies" and "delirium tremens" had not been defined in the court below, but it was held that the meaning of the terms, which were used synonymously, was fully explained in the medical testimony and that the jury could not fail to understand them. The term "drunkard" is generally defined by the courts to mean a person given to inebriety, or the excessive use of intoxicating drink, who has lost the power or will, by frequent indulgence, to control his appetite for it. Clearly the evidence tended to show such an addiction on the part of the insured. The word "drunkard" is not in any sense a technical word. It has no peculiar or technical legal significance. It is an ordinary word, used in its ordinary and popular sense, and is generally well understood. The judgment of the court below was reversed and the cause remanded.

Spinal Arthritis as a Sequel of Back Strain

(Biker v. Industrial Commission et al (Ill.), 160 N. E. 180)

Biker was awarded compensation for temporary total incapacity for work, under the workmen's compensation act. Later he petitioned to have the award reviewed, alleging that his disability had recurred and increased. The industrial commission denied the petition, but the circuit court reversed the finding of the commission and held that Biker's injury had recurred and increased, rendering him wholly and permanently incapacitated. The employer thereupon carried the case to the supreme court of Illinois. Biker alleged that on March 4, 1922, he wrenched his back by pushing an empty coal car, and it was on that basis and because of certain other alleged injuries that the initial award was confirmed by the industrial commission, May 11, 1923. Physical and roentgen-ray examinations made by three physicians separately, on and before May 4, 1922, failed to disclose disease or injury of the spine. The lumbar curve was decreased, and there was a possible, but not positive, increased tenseness of the left lumbar muscles in the upright position. There was no fixation of any portion of the spine in stooping. There was no tilting of the pelvis. Roentgen-ray examinations made in May, July and October, 1924, showed, however, an advanced ankylosis between the last thoracic and first lumbar vertebrae, with arthritic changes involving particularly the transverse processes on the left side, in the second and third lumbar vertebrae. There was a slight torsion of the fourth lumbar vertebra. Physical examinations showed a stiff back or rigid spine. No other organic trouble of any kind could be found. The apparent absence of the transverse process on the fourth lumbar vertebra was due to the rotation of that vertebra by muscle pull. Biker could not write or read the English language and never had any schooling in his own language, except a half year. The court held that he was clearly permanently injured and incapacitated for any manner of work in which stooping and lifting are involved and the court did not know of any manual labor that could be performed without stooping and lifting. The award of the circuit court based on total and permanent disability was not excessive. The judgment of that court was affirmed.

Society Proceedings

COMING MEETINGS

Boston Trudeau Society, Boston, November 13. Dr. Randall Clifford, 475 Commonwealth Avenue, Boston, Secretary.

Clinical Orthopedic Society, Chicago, November 19-20. Dr. Robert V. Funston, 1337 David Whitney Building, Detroit, Secretary.

Medical and Surgical Association of the Southwest, Albuquerque, New Mexico, November 8-10. Dr. W. Warner Watkins, Box 1587, Phoenix, Ariz., Secretary.

Ohio Valley Medical Association, Evansville, Ind., November 14-15. Dr. Bruce H. Beeler, 3rd and Main Streets, Evansville, Secretary.

Philippine Islands Medical Association, Manila, December 12-15. Dr. A. S. Fernando, 547 Calle Herran, Manila, Secretary.

Porto Rico, Medical Association of, San Juan, Dec. 1. Dr. M. Pavia Fernandez, Salvador Brau 51, San Juan, Secretary.

Radiological Society of North America, Chicago, December 3-7. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.

Society of American Bacteriologists, Richmond, Va., December 27-29. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.

Southern Medical Association, Asheville, N. C., November 12-15. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, White Sulphur Springs, W. Va., December 11-13. Dr. R. L. Payne, Medical Arts Bldg., Norfolk, Va., Sec'y.

Western Surgical Association, Chicago, December 14-15. Dr. Harry P. Ritchie, 914 Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Tropical Medicine, Baltimore

8: 363-506 (Sept.) 1928

Passage of Virus of Yellow Fever Through Skin. J. H. Bauer and N. P. Hudson, Lagos, Nigeria, West Africa.—p. 371.
Blastomycosis and Some Other Conditions Due to Yeastlike Fungi (Budding Fungi). A. Castellani, New Orleans.—p. 379.
*Spleen and Parasite Rates as Measures of Malaria in Caribbean Area. H. C. Clark, New York.—p. 423.
*Blood Feeding Habits of Anopheles Pseudopunctipennis in Northern Argentina. N. C. Davis and R. C. Shannon, New York.—p. 443.
Plasmodium Tenue (Stephens). P. F. Russell, New York.—p. 449.
Intestinal Protozoa of Domestic Pig. J. W. Kessel, Peking.—p. 481.
Vitamin A Content of White Yautia, Yellow Yautia and Plantain; Possible Relationship Between Color of Natural Food and Its Richness in Vitamin A. E. J. Quinn, New York, and D. H. Cook, San Juan, P. R.—p. 503.

Spleen and Parasite Rate as Measures of Malaria?—Clark reports that the parasite rate, when the thick blood film method was used, was 23.5 per cent in 11,000 adult Haitian negroes, while the same test on 1,102 of their children showed a rate of 41.9 per cent. The spleen rate in the same adults was 3.05 per cent and in the same children, 22.78 per cent. Of the 2,585 adult negroes whose blood films were positive for the parasites of malaria, only 110 had palpable spleens. Of the 462 children whose blood films were positive for malaria, 175 had palpable spleens. Of the 335 adult negroes who had palpable spleens, 225 did not show malarial parasites in their blood films. Of the 251 negro children who had palpable spleens, seventy-six failed to reveal parasites in their blood films. Two hundred and sixty-four, or 78.7 per cent, of the palpable spleens found in the adult negroes were barely palpable; while 131, or 52.2 per cent, of the palpable spleens in the children were of the same type. Extreme cases of splenic enlargement, with the spleen 1,000 Gm. or more in weight, were commonly found in the Latin American labor class of the autopsy series, and were very rarely encountered in the negro, even though he had lived for a number of years on the mainland under the same environment as the Latin Americans. Analysis of the autopsy series of cases indicates that acute enlargement of the spleen in negroes is more significant and constant in typhoid and in lobar pneumonia than in malaria of the estivo-autumnal type. It would appear, from analysis of the clinical records associated with the weights of the spleen at autopsy, that in adults this organ must exceed 300 Gm. before palpation can score a very high rate of success.

Blood Feeding Habits of Anopheles.—Examination made by Davis and Shannon of ingested blood by the precipitin reaction has shown that *Anopheles pseudopunctipennis* captured in the houses of two localities in the Province of Tucumán, Argentina, had fed on various hosts in the following proportions: man, 50 per cent; dog, 21.8 per cent; horse, 8.9 per cent; sheep or goat, 6.2 per cent; cow, 5.5 per cent; chicken, 3.2 per cent; hog, 2.5 per cent; cat, 1.8 per cent. As man and dog are essentially house dwellers at night, the results demonstrate a very high domesticity for the insect.

Annals of Medical History, New York

10: 213-322 (Sept.) 1928

Blood Transfusion by Richard Lower in 1665. M. W. Hollingsworth, Santa Ana, Calif.—p. 213.
Prefatory Essay to Introduction to Study of Physic by William Heberden, M.D. Le R. Crummer, Omaha.—p. 226.
Influence of James Blundell on Development of Blood Transfusion. H. W. Jones and G. Mackmull, Philadelphia.—p. 242.
Dr. John Rutty of Dublin and His "Spiritual Diary and Soliloquies." W. T. S. Sharpless, West Chester, Pa.—p. 249.
Heritage of Paracelsus. P. M. Dawson, Madison, Wis.—p. 258.
Fifteen Century Autopsy by Bernard Tornius. L. Thorndike, New York.—p. 270.
Theodore Billroth, Scholar, Musician, Master Surgeon. E. R. Wiese, Pittsburgh.—p. 278.
Michael Servetus, Physician and Heretic. G. A. Williams, Atlanta, Ga.—p. 287.
Ceylon (Sinhalese) Olas or Book Manuscripts on Early Medicines and How They Were Made. A. Nell, Kandy, Ceylon.—p. 292.
Anesthetist's Dream. W. B. Howell, Montreal.—p. 297.
Olof Rudbeck the Elder. O. Larsell, Portland, Ore.—p. 301.
Paleopathology of Patagonia. R. L. Moodie, Santa Monica, Calif.—p. 314.

Archives of Neurology and Psychiatry, Chicago

20: 663-894 (Oct.) 1928

Local Tetanus: Study of Muscle Tonus and Contracture. S. W. Ranson, Chicago.—p. 663.
Glossopharyngeal Neuralgia: Surgical Treatment: Distribution of Glossopharyngeal Nerve. B. Stookey, New York.—p. 702.
Development of Human Motility and Motor Disturbances. G. Schaltenbrand, Hamburg-Eppendorf, Germany.—p. 720.
Hyaline Degeneration of Blood Vessels in Neurosyphilis: Four Cases. K. Lowenberg, Foxboro, Mass.—p. 730.
Course of Motor Fibers Through White Matter of Spinal Cord. C. H. Craw, Toronto.—p. 741.
Cerebral Circulation: IV. Action of Hypertonic Solutions: II. Study of Circulation in Cortex by Means of Color Photography. L. S. Kubie and D. M. Hetler, New York.—p. 749.
Experimental Convulsions: Crucial Experiment to Determine Convulsive Site. L. Davis and L. J. Pollock, Chicago.—p. 756.
*Studies in Epilepsy: VII. Basal Metabolism. W. G. Lennox and L. H. Wright, Boston.—p. 764.
*Id. VIII. Clinical Effect of Fasting. W. G. Lennox and S. Cobb, Boston.—p. 771.
*Barrier Between Blood and Cerebrospinal Fluid: I. Changes in Permeability in Mental Diseases. W. Malamud, D. M. Fuchs and N. Malamud, Foxboro, Mass.—p. 780.
*Is There Epileptic Personality Make-Up? J. Notkin, New York.—p. 799.
Brain-Liver Weight Ratio in Epilepsy. H. A. Patterson and S. M. Weingrow, Sonyea, N. Y.—p. 804.
Optic Nystagmus: I. Technical Introduction, with Observations in Patient with Central Scotoma in Right Eye and External Rectus Palsy in Left Eye. R. Dodge and J. C. Fox, Jr., New Haven, Conn.—p. 812.
*Dystonia Musculorum Deformans of Encephalitic Etiology: Vegetative Nervous System Disturbances. M. R. Kaufman, Montreal, N. Savitsky and J. R. Freid, New York.—p. 824.
Measurement of Cerebral and Cerebellar Surfaces: V. Determination of Shrinkage of Surface of Different Vertebrate Brains. A. Weil, New York.—p. 834.
Corneal and Scleral Anesthesia of Lower Half of Eye in Case of Trauma of Superior Maxillary Nerve. A. R. Vonderahe, Cincinnati.—p. 836.
Syringomyelic Syndrome Associated with Hereditary Cerebrospinal Syphilis: Case. P. H. Garvey, Ann Arbor, Mich.—p. 837.

Basal Metabolism in Epilepsy.—Measurements of the rate of consumption of oxygen have been made by Lennox and Wright in 130 patients with epilepsy. The average basal metabolic rate for the group was 3 per cent below normal. Thirty-one per cent of the measurements were outside the normal zone of 10 per cent above or below normal. Twenty-three per cent were 10 per cent or more and 12 per cent were 15 per cent or more below normal. In certain of the patients, the low rates can apparently be explained by a disturbed function of the pituitary gland; in others, they may be an evidence of bodies which, because of the poor musculature and faulty posture, are functioning below their normal levels.

Effect of Fasting on Epilepsy.—Twenty-seven patients with convulsions fasted for periods of from four to twenty-one days. Except in one patient, there was little permanent effect on the seizures. In the majority of patients, seizures were absent or greatly reduced during the fasting period itself. Lennox and Cobb suggest that as a therapeutic emergency measure, fasting may be useful in helping patients over a period of frequent seizures.

Barrier Between Blood and Cerebrospinal Fluid.—Changes in the barrier between the blood and the cerebrospinal fluid were studied by Malamud et al. in 270 cases representing a number of mental diseases. It was found that many of the patients showed more or less characteristic changes, the most important of which were as follows: (*a*) In cases of psychosis with cerebral arteriosclerosis, and in psychoses belonging to other groups, in which there were signs of concomitant sclerosis of the cerebral vessels, a marked increase in permeability was noted (low permeability quotient). (*b*) Untreated patients with paresis and cerebrospinal syphilis showed a similar increase in permeability, which tended to decrease under successful treatment. (*c*) Patients with schizophrenia of different types showed a marked tendency to decreased permeability (high permeability

quotient). The permeability quotients showed little variation on repeated determinations. A relationship between the permeability quotient and age, sex or menstruation could not be demonstrated.

Is There an Epileptic Personality Make-Up?—A study made by Notkin of the personality make-up of seventy-five male and seventy-five female epileptic patients revealed a definite correlation between the age of onset of seizures and the type of personality noted later. The so-called epileptic make-up is apparent in cases in which there is an early onset of seizures. This constitutes only 16.6 per cent of the whole group. On the other hand, in the largest group of 37.3 per cent, with the so-called syntonic or normal type of personality, the onset of the seizures occurred after the age of 12 and in the majority of cases after the second decade. Between these two extremes there are several other groups. In one the personality was at first benign but later, after the onset of the convulsive seizures, it became epileptoid. In several other instances, the seizures were infrequent, and then the relatively benign type of personality was noted. In 8 per cent of the cases the personality was pure schizoid; in 1.3 per cent, the personality was at first schizoid and later after the onset of seizures, became epileptoid. In another group of 8 per cent, the personality in the beginning was of a benign type and later changed to schizoid after the convulsive seizures began. All this points to the variability of the type of personality encountered in patients with epilepsy. There seems to be no specificity about it. The personality previous to the onset of seizures seems to be entirely independent of the influence of the epileptic manifestation, and such changes as occur are noted only after the convulsive seizures manifest themselves. In normal, benign types of personality, in which the seizures occurred later in life, the admixture or the entire lack of so-called epileptoid traits depends on the type of the individual and his previously established adjustment in life. It seems unwarranted, therefore, to speak of a definite epileptic type of personality. Such peculiarities as develop in epileptic persons are looked on as the result of the epileptic reaction and not as the cause of the convulsive manifestation in so-called idiopathic epilepsy.

Etiology of Dystonia Musculorum Deformans.—Seventeen cases of dystonia musculorum deformans were studied by Kaufman et al.; five were definitely encephalitic; four were of doubtful encephalitic etiology; eight were of degenerative type. Symptoms of smooth muscle dysfunction were present in ten cases, of which five were encephalitic; four were of doubtful encephalitic origin and one was of degenerative origin. The gastro-intestinal symptoms in the last case may be explained by the presence of migraine. These symptoms were absent in the degenerative type of the disease.

Archives of Pathology, Chicago

6: 553-772 (Oct.) 1928

*Tularemia: Rapidly Fatal Case (Four Days, Seven Hours). W. M. Simpson, Dayton, Ohio.—p. 553.
*Histogenetic Interpretation of Certain Carcinoids of Small Intestines: Neoplasm-Like Malformation of Tissue of Pancreas. K. Semsroth, Pittsburgh.—p. 575.
Microscopic Changes of Heterophile Skin Reaction: Pathology of Heterophile Skin Reactions. W. W. Redfern, Chicago.—p. 585.
Xanthoma of Choroid Plexus. G. H. J. Pearson, Philadelphia.—p. 595.
Structure and Arrangement of Bile Canaliculi. A. H. McIndoe, Rochester, Minn.—p. 598.
*Transfer of Irritated Omentums with Subsequent Immunity to Streptococci. R. W. Linton, New York.—p. 615.
*New Aspects of Formation and Classification of Gallstones. B. Halpert, Chicago.—p. 623.
Heterophile Antigen in Human Blood. I. Davidsohn, Philadelphia.—p. 632.
Graphite Preparation for Intravital Staining. B. M. Palmer and G. M. Higgins, Rochester, Minn.—p. 638.
New Building for Postmortem Examinations at Denver. E. F. Dean, Denver.—p. 643.
Malaria. C. F. Craig, Washington, D. C.—p. 645.

Rapidly Fatal Case of Tularemia.—That death from tularemia probably occurs more frequently than the figures gathered from the literature might indicate (3.75 per cent) is shown, Simpson says, by the discovery of seven deaths probably due to tularemia in his home city. Postmortem examination in the most rapidly fatal case of tularemia in man on record (four days and seven hours) provided Simpson an opportunity to study the early gross and microscopic manifestations of the disease. The characteristic "spotted spleen" and enlarged caseous regional lymph nodes were found. Careful scrutiny of the liver did not reveal gross evidence of focal necrosis. He says that the lesions of tularemia should be classed with those of the infective granulomas. *Bacterium tularense* was recovered from serum collected twenty-four hours prior to death. The organism was likewise recovered from tissue from the axillary lymph nodes removed at autopsy. The best growth was obtained on a human serum modification of Francis' cystine agar medium. It was demonstrated experimentally that the organism will penetrate the unbroken skin of guinea-pigs. The oculoglandular form of the disease was produced experimentally in guinea-pigs.

Tumor of Pancreas.—In the case reported on by Semsroth, a tumor nodule was found on the head of the pancreas. On the basis of its topography, its structure and the behavior of the adjoining pancreas, this nodule was interpreted as a neoplasm-like malformation of tissue, due to an incomplete insulo-acinar transformation of a primary pancreatic nodule. In the same case, heterotopic epithelial structures in the wall of the duodenum were found. The muscular coat contained adenomyomas and adenomas of the intestinal gland type. The submucous coat contained a carcinoid. In spite of the heterotopy, none of these epithelial structures showed the morphology of a malignant epithelial neoplasm. The malformation of the pancreas, and the adenomyomas and the adenomas of the intestinal gland type in the muscularis of the duodenum appear to have been due to a faulty differentiation of the entoderm. Evidence of dysontogenesis and absence of signs of a malignant condition led the author to regard the carcinoid of the duodenum as a dysontogenetic heterotopy.

Prevention of Peritonitis.—Linton reports that rabbits which have received irritated rabbit omentums intraperitoneally, and which are subsequently infected intrapleurally with *Streptococcus hemolyticus*, survive the infection in about 70 per cent of the cases. The survival is correlated with the appearance in the infected cavity of a large proportion of clasmatocytes. A preliminary experiment shows that survival may occur when the omentum is inserted twenty-four hours after intrapleural infection has begun.

Function of Gallbladder and Formation of Gallstones.—The hypothesis of gallbladder function advanced by Halpert is that the gallbladder is not a reservoir the function of which is the supplying of concentrated bile whenever there is a call for it in the intestine, but an organ the function of which is the returning of important constituents of the bile into the circulation, and, by the resorption of bile, relieving and regulating the pressure within the biliary system while the sphincter of the ductus choledochus is closed. This theory permits of a precise definition of "functional biliary stasis" and leads to the differentiation of three types of stasis, each of which is accompanied by gallstones: the hepatogenous stasis accompanied by the formation of "pure gallstones"; the systogenous stasis accompanied by the formation of "mixed gallstones," and the chronic stasis of bile in the gallbladder accompanied by the formation of "combined gallstones." The wide range of differences shown in the architecture and chemical composition of gallstones is the result, on the one hand, of changes in the composition of the bile due to excessive excretion by the liver of stone-forming substances, and, on the other, of a relative or absolute resorptive insufficiency of the mucosa of the gallbladder.

Archives of Surgery, Chicago

17: 535-714 (Oct.) 1928

*"Chronic Mastitis," "Cysto-Adenoma" and Adenoma of Breast. G. L. Cheatle, London.—p. 535.
*Chronic Ulcerative Colitis Associated with Malignant Disease. J. A. Bargen, Rochester, Minn.—p. 561.
*Blood Supply to Appendix. H. Koster and M. Weintrob, New York.—p. 577.
Spontaneous Dislocations of Hip Joint During Early Life: Twenty-Eight Cases. V. L. Hart, Ann Arbor, Mich.—p. 587.
*Effect of Injections of Hydrochloric Acid on Gastric and Duodenal Mucosae. W. J. Gallagher, Chicago.—p. 613.
Submucous Lipoma of Colon: Case. J. A. MacFarlane, Toronto.—p. 627.
Cancer of Lower Lip: Operative Technic in Plastic Repair. F. R. Fairchild, Woodland, Calif.—p. 630.
Exstrophy of Bladder Complicated by Carcinoma: Two Cases. E. S. Judd and H. L. Thompson, Rochester, Minn.—p. 641.

*Relative Mechanical Strength of Enterostomies Performed With and Without Clamps. R. A. Cutting, New Orleans.—p. 658.
*Trauma as Factor in Acute Appendicitis. A. H. Bissell, Stamford, Conn. —p. 672.
*Empyema in Infants Under Two Years of Age. W. F. Rienhoff, Jr., Baltimore, and W. C. Davison, Durham, N. C.—p. 676.
Thirty-Sixth Report of Progress in Orthopedic Surgery. P. D. Wilson, Boston, and Others.—p. 689.

Chronic Mastitis, Cysto-Adenoma and Adenoma of Breast.—Cheatle discusses these conditions from several points of view. The first is concerned with placing the so-called chronic mastitis in its correct etiologic and pathologic position. Its morphologic appearances are identical with those of the physiologic active state at birth, at puberty and in certain phases of lactation. This active state becomes pathologic when it is present at from about 30 to 45 years of age and induces diffuse pain, and when fibro-adenomas (usually of the same type as those which form at puberty) develop in its occupied areas. These two separate occurrences belong to the condition to which the term chronic mastitis is so universally applied. The second object is to point out that the commonest type of fibro-adenoma that occurs at puberty is a local exaggeration of the physiologic and active hyperplasias which are normal at puberty. A third object is to point out the importance of a state—of formations of epithelial tumors in the ducts and acini—which crops up in the literature, of a pathologic condition in several guises and disguises, including that of "cysto-adenoma." A fourth object is to describe a true adenoma of the breast.

Chronic Ulcerative Colitis Associated with Malignant Disease.—Bargen analyzes twenty-three cases of chronic ulcerative colitis in which it was believed, because of various clinical and pathologic signs and symptoms, that a malignant disease of the colon had developed. Postmortem examination in three of these cases failed to reveal malignant disease. There was, instead, extensive ulceration and polyposis. In three others the proof was large filling defects in the colon, with sudden and rapid change of symptoms, obstruction, cachexia and anemia. A specimen for diagnosis was not obtained. In the remaining seventeen cases the condition was proved to be malignant, either by the specimen removed or at necropsy. The medical treatment had varied. In a few cases, injections of vaccine had been given subcutaneously; in most of them, rectal irrigations with one or another of the so-called intestinal antiseptics had been given. In most of the cases, a fairly definite change of symptoms could be elicited by which the beginning of the malignant process could be estimated. In nineteen of the series of twenty cases, there was a recent rapid loss of weight; in seventeen, the pain and cramps in areas along the course of the colon increased in intensity somewhat abruptly; in twelve, the clinical signs of varying degrees of obstruction were noted; in ten, there was a sudden progressive increase in the amount of bloody rectal discharge; in ten, there was an appearance of greater visceral degeneration; in seven, noticeable cachexia developed; in four, an abdominal mass was palpable; in three, increased urgency and straining were present, and in a considerable number, peculiar pallor was noted, although in only seven was the hemoglobin below 50 per cent; in general, the hemoglobin was not lower than that in most persons with chronic ulcerative colitis. In the roentgenograms in eight cases, besides the characteristic appearance of chronic ulcerative colitis, shadows of definite filling defects were noted in various parts of the colon, along the course of the ulcerative process. The position of the filling defect was not characteristic, the malignant lesion occurring almost anywhere in the colon, although not at the splenic flexure. In all cases the proctoscopic picture was that of severe chronic ulcerative colitis. In seven cases, benign polyps were present in the rectum. In seven, grossly malignant lesions were seen through the proctoscope (in four of these, polyps were also present). Of the twenty cases discussed, there were fourteen cases of proved carcinoma, two of lymphosarcoma, and one of lymphatic leukemia; in three, the condition was diagnosed as carcinoma, either by proctoscopic or by roentgenologic evidence. In six cases, the carcinoma was multiple in the colon; in one case, there was diffuse carcinomatosis along the entire length of the colon, the cells showing a high degree of malignancy. Wherever there were islets of regenerating mucosa, they were malignant. In most of these cases the carcinoma was of a high degree of malignancy. The multiple carcinomas were of a higher degree of malignancy than the single, being graded, according to Broders' classification, 3+ and 4. Fifteen patients were operated on and twelve died, seven of generalized purulent peritonitis, two of pneumonia and three of metastasis. Two other patients were treated by radium with definite shrinkage of the tumor in one instance. The patient who had lymphosarcoma was living a year after the resection.

Blood Supply to Appendix.—The arterial architecture of 100 appendixes, normal and pathologic, removed from human beings representative of the first to the seventh decades of life, inclusive, was studied by Koster and Weintrob. The macroscopic observations on the blood supply to the normal appendix show that the appendicular arterial tree is remarkably constant in its architecture. The definite determination of the supply into two layers, the richer of which is the deeper, and the absence of a distinct blood supply to the mucosa, are undoubtedly of physiologic importance. Attention is again drawn to the remarkable corkscrew and spiral character of the appendicular branches of the second, third and subsequent orders. The next striking point about the blood supply is its richness and profuse anastomosis. This, again, is analogous to the condition found in organs subject to vascular obliteration, e. g., the heart. The number of fat vessels found in the meso-appendix seems to be out of proportion to that necessary to nourish a similar amount of fat, and the close parallelism between the prominence of these vessels and the extent of the inflammatory process in the appendix suggests that these vessels play a compensatory rôle. It has been shown that inflammations of the appendix are consistently paralleled by changes in the course and character of the blood vessels. Undoubtedly, most of these changes follow the original inflammatory changes and are due to the edema. The diminution in tortuosity and the increased prominence of the radical twigs are undoubtedly occasioned by the swelling of the appendix and separation of the layers. Vascular obliteration is due to edema and in some instances to thrombi. It is obvious that at least in those cases in which the vascular changes are only qualitative in nature, restitution to integrity of the organ may follow a subsidence of the inflammation. When, however, the process has proceded to vascular obliteration to any considerable extent, complete return to normalcy is hardly to be expected.

Effect of Hydrochloric Acid on Gastric and Duodenal Mucosa.—The changes produced by injecting different concentrations of hydrochloric acid into the stomachs of thirteen dogs have been studied by Gallagher. The experiments were carried out on two groups. In one group of seven animals with jejunal transplants to the stomach, acid was injected once or twice daily in amounts of from 200 to 225 cc. of a 0.22, 0.29 or 0.62 per cent solution. Vomiting was frequent; mucus was present in the stomachs in large quantities. There was frequently some delay in the emptying time of the stomach in these animals. The greatest changes were usually present in the fundal mucosa. Acute ulcers were observed in the pyloric mucosa of two animals, while a chronic gastric ulcer of the fundal mucosa was observed in one. Repeated trauma from the stomach tube was suggested as a factor in the production of this lesion. The most constant observations were acute and chronic gastritis with multiple erosions; these changes were greater when the higher concentrations of acid were used. A localized area of duodenitis, with erosions in two, was present in four of the seven animals. In the second group of six control animals, a 0.62 per cent solution was injected in similar amounts two or three times daily. Chronic ulcers were not observed, but changes similar to those in the stomachs and duodenal mucosae of the animals in the first group were noted, although to a lesser degree. A delay in the emptying time of the stomachs of this group was not observed. Histologic studies were made of different parts of the gastric and duodenal mucosae showing different types of erosions, acute ulcers and cellular changes. Attention is called to the similarity of these lesions to those found clinically in the stomach and duodenum and the probable importance of hydrochloric acid in the production.

Value of Various Technics for Enterostomy.—Cutting states that entero-enterostomies performed by both "clamp" and "clampless" technics are about one-third as strong as normal

intestine immediately after they are performed; they progressively decrease in strength for three days, then rapidly and progressively increase in strength up to, or exceeding, the strength of normal intestine by the tenth day, then suddenly fall again to about 50 per cent of the intact intestine on the eleventh day, and on the twelfth are again on the ascent. Entero-enterostomies performed with clamps, when the latter are used merely for purposes of "approximation of the parts and for control of intestinal leakage" are, if anything, slightly stronger than ones performed with "guy sutures," especially on the second, third and fourth postoperative days, which constitute the critical period. Entero-enterostomies performed by either method and on all postoperative days, up to and including the twelfth, showed marked variations in strength, even though operative technic was kept as constant as humanly possible and postoperative care was the same in all cases, variations exceeding 100 per cent being noted frequently in the early three or four days and variations of the order of magnitude of 50 and 75 per cent being common throughout the entire twelve days. The normal upper jejunum ruptures most characteristically (i. e., in about three fourths of the cases) at its antimesenteric border, though less frequently it ruptures at its mesenteric border, and occasionally at a point intermediate between the two; the characteristic rupture is a diffuse one with explosive violence and involves the mucosa and submucosa more extensively than the serosa.

Acute Traumatic Appendicitis.—The four cases reported by Bissell occurred in 101 appendectomies, making trauma an etiologic factor in 4 per cent. At the time of injury all these patients were in good health. A history of previous attacks of acute appendicitis could not be obtained in any case. There was, in each case, a definite history of severe trauma, with immediate abdominal pain, nausea and vomiting. The symptoms were continuous up to the time of operation. In each case, a perforation opposite the mesentery was found in the appendix. In each case, a concretion was recovered which presumably had perforated through the appendix. Bissell believes that the trauma caused the concretion to impinge tightly in the lumen of the appendix resulting in an obstruction in that organ, with hemorrhagic infarction, necrosis and perforation on the antimesenteric border, bearing out the observation made by Van Buren on mechanical ileus.

Empyema in Young Infants.—An analysis has been made by Rienhoff and Davison, in relation to several factors, of the destribution of cases and deaths in a series of forty-eight cases of empyema in infants under 2 years of age, in whom the condition was treated surgically. Five of these factors have a striking effect on the fatality rate, i. e., the fatality rate was highest among infants in poor physical condition, those who had left sided or double empyema, those who had nonpneumococcal infections, those who developed complications and those in whom operation was performed by means of the closed thoracotomy or the trocar and cannula method. It is the belief of the authors that in infants open thoracotomy (rib resection) is on the whole a more satisfactory procedure than closed thoractomy (in which the trocar and cannula were used), mainly because an immediate, uninterrupted free drainage of the affected pleural cavity is accomplished. They feel that the slight blocking which often occurred in the closed thoracotomy was in all probability mainly responsible for the marked increase in complications associated with this procedure. Owing to the fact that a lateral intercostal incision is so frequently associated with a pinching and occlusion of the rubber drainage tube, the partial rib resection is the method of open thoracotomy to be preferred. A partial pneumothorax resulting from the open thoracotomy is apparently less dangerous than is the inadequate drainage associatel with the closed thoracotomy.

Arkansas M. Society Journal, Little Rock

23: 71-90 (Sept.) 1928

Failure of Physical Examination or Roentgen-Ray Examination to Reveal Beginning of a Tuberculous Process and Their Failure to Show Full Extent of Pathology at Any Time: Verified by Autopsy. S. E. Thompson, Kerrville, Texas.—p. 71.
Chorio-Epithelioma of Uterus: Case. M. E. McCaskill and M. J. Kilbury, Little Rock.—p. 76.
Treatment of Tuberculosis. A. C. Shipp, Little Rock.—p. 81.

Atlantic Medical Journal, Harrisburg, Pa.

31: 891-1002 (Sept.) 1928

Lung Abscess Following Tonsillectomy from Standpoint of Roentgenologist. W. F. Manges, Philadelphia.—p. 909.
Lung Abscess Following Tonsillectomy from Standpoint of Bronchoscopist: Fifty-Eight Cases. L. H. Clerf, Philadelphia.—p. 911.
What Do We Really Know About Treatment of Ulcer? W. C. Alvarez, Rochester, Minn.—p. 918.
Diagnosis and Treatment of Orthopedic Deformities in Early Childhood. D. P. Willard, Philadelphia.—p. 924.
Diagnosis and Treatment of Surgical Tuberculosis in Early Childhood. J. O. Wallace, Pittsburgh.—p. 927.
Prevention and Correction of Deformity in Treatment of Infantile Paralysis. W. J. Merrill, Philadelphia.—p. 931.
Urinary Calculi: Etiology. D. P. Ray, Johnstown, Pa.—p. 934.
Id.: Diagnosis. H. A. Gailey, York, Pa.—p. 935.
Id.: Rapidity of Growth. A. Randall, Philadelphia.—p. 937.
Id.: Treatment. W. L. Estes, Jr., Bethlehem, Pa.—p. 940.
Nervous Manifestations of Several Common Pediatric Conditions. H. T. Price, Pittsburgh.—p. 944.
Ketogenic Diet in Epilepsy. J. L. Foster, Pittsburgh.—p. 945.
Acute Anterior Poliomyelitis: Serum Therapy. G. V. Foster, Pittsburgh.—p. 946.
Specific Vaginitis in Children. R. H. Middleton, Pittsburgh.—p. 947.
Cases of Tuberculosis. D. H. Boyd, Pittsburgh.—p. 949.
Pericarditis. H. C. Flood, Pittsburgh.—p. 952.
Talipomanus (Congenital Club Hand). T. O. Elterich, Pittsburgh.—p. 953.

Journal of Experimental Medicine, Baltimore

48: 457-601 (Oct.) 1928

*Effect of Light on Blood and Tissue Cells: I. Action of Light on White Blood Cells in Vitro. W. R. Earle, Nashville, Tenn.—p. 457.
*Transfer of Rat Anemia to Normal Animals. W. W. Ford and C. P. Eliot, Baltimore.—p. 475.
Conversion of Hemolytic Streptococci to Nonhemolytic Forms. E. W. Todd, New York.—p. 493.
*Mechanism of Recovery from Lobar Pneumonia. R. H. P. Sia, Peking, O. H. Robertson, New York, and S. T. Woo, Peking.—p. 513.
Nitrogen Metabolism of Normal and Sarcomatous Fibroblasts in Pure Cultures. L. E. Baker and A. Carrel, New York.—p. 533.
Biometry of Calcium, Inorganic Phosphorus, Cholesterol and Lipoid Phosphorus in Blood of Rabbits: I. Normal Animals from Recently Acquired Stock. A. R. Harnes, New York.—p. 549.
Influence of Light Environment on Organic Constitution of Normal Rabbits: Action of Neon Light. W. H. Brown, New York.—p. 567.
Chemical Findings in Blood of Dog After Temporary Obstruction of Pylorus. R. L. Haden and T. G. Orr, Kansas City, Kan.—p. 591.

Effect of Light on Blood and Tissue Cells.—An extreme and rapid degeneration which occurred in tissue cultures of leukocytes from the blood of cats, guinea-pigs and rabbits is described by Earle. This degeneration was found to appear in the culture when the cells were planted in any of the culture medium tried, some of which were autogenous heparin plasma, autogenous plasma, autogenous serum, Tyrode solution and mixtures of these with embryo juice. The factor causing this degeneration was found to be exposure of the culture to light, as, for example, during microscopic examination. By a reduction of the infra-red part of the spectrum, it was indicated that the effect was not due to a heat coagulation of the cells. This degeneration was also found to occur in the complete absence of ultraviolet wavelengths. Further, it was shown that this degeneration was caused by light which lay within each of the three wavelength zones (1) 430 to 550 millimicrons; infra-red; (2) 475 to 630 millimicrons, 690 millimicrons to infra-red; (3) 600 millimicrons to infra-red. This degeneration of the leukocytes under the action of light was also found to occur on irradiation of hanging drops of whole blood. It was noted, however, that the leukocytes in hanging drop cultures required a markedly longer time for their degeneration under the action of light than did the leukocytes in cultures prepared from the buffy coat and inoculated in serum. This is considered as possibly due either to injury to the cell during centrifugalization and subsequent handling or to some action of the red blood cells present in large amounts in the hanging drops of whole blood. In these hanging drop cultures of whole blood degeneration of the leukocytes was also found to occur when the light reaching the culture was first freed from the larger part of its infra-red and from all of its ultraviolet.

Transfer of Rat Anemia to Normal Animals.—The virus of rat anemia was transferred by Ford and Eliot from young normal rat to young normal rat with the appearance of *Bartonella muris* and the production of anemia. In the early transfers the disease may be fatal, but it usually becomes milder in successive passages. Although they have not yet been able to

cultivate *Bartonella muris* and prove its etiologic relationship to rat anemia by inoculation of cultures, the authors have added to the evidence that *Bartonella muris* is the cause of the anemia. Washed red blood corpuscles, containing bartonellas, will produce the anemia in the usual way while plasma from the same cells either will fail to produce it altogether or will produce it only after a prolonged incubation period. Blood heated to 57 C. for one-half hour fails to produce anemia or the appearance of bartonellas in the blood of inoculated animals.

Mechanism of Recovery from Lobar Pneumonia.—Employing a method devised for the investigation of natural immunity and experimental pneumococcus infection, Sia et al. have made a study of the serum immune changes occurring during the course of lobar pneumonia due to pneumococcus types I and II and group IV, in man. It was found that at the time of crisis or lysis the blood serum acquired constantly the property of promoting pneumococcus killing to a relatively marked degree. Other evidences of antipneumococcus reaction —mouse protection, opsonins, and agglutinins—were also demonstrable in the blood at this time. These immune changes appeared in the majority of cases at the beginning of recovery and failed to occur when the disease terminated fatally. The fact that these observations in human cases are practically identical with previous observations in the experimental disease in cats enhances considerably the significance of the development of serum immune bodies at the time of crisis, since in the experimental animal it was possible to show that the acquisition of passive immunity was associated with greatly increased antipneumococcus resistance.

Journal of Infectious Diseases, Chicago

43: 181-272 (Sept.) 1928

Proteus Ammoniae. T. B. Magath, Rochester, Minn.—p. 181.
Serologic Types of Clostridium Tetani. G. E. Coleman and J. B. Gunnison, San Francisco.—p. 184.
*Treatment of Typhoid with Detoxicated Vaccine. W. B. Wherry and others, Cincinnati.—p. 189.
Replacement of Potassium by Other Elements in Culture Mediums. C. H. Boissevain, Colorado Springs.—p. 194.
"Filtrable Forms" of Tubercle Bacillus. F. B. Cooper and S. A. Petroff, Trudeau, N. Y.—p. 200.
Chronic Localized Streptococcus Infections in Dogs: Experimental Focal Infection. G. B. Rhodes and C. W. Apfelbach, Chicago.—p. 215.
*Döderlein's Bacillus: Lactobacillus Acidophilus. S. Thomas, Bethlehem, Pa.—p. 218.
Method of Staining Flagella. E. Weiss, Chicago.—p. 228.
Studies on Metabolism of Abortus-Melitensis Group: 4. Effects of Various Concentrations of Carbon Dioxide. J. G. McAlpine and C. A. Slanetz, Storrs, Conn.—p. 232.
*Pathology and Etiology of Mexican Typhus (Tabardillo): 1. In Guinea-Pigs. H. Mooser, Mexico City, Mexico.—p. 241.
*Id.: 2. Diplobacillus from Proliferated Tunica Vaginalis of Guinea-Pigs Reacting to Mexican Typhus. H. Mooser, Mexico City, Mexico.—p. 261.

Treatment of Typhoid with Detoxicated Vaccine.—*B. typhosus* antigen can be detoxicated to a considerable degree by treating it with formaldehyde according to Ramon's method. From about 82,000,000 to 164,000,000 treated bacilli may be injected subcutaneously, and daily, into a patient with typhoid, irrespective of the apparent severity of the disease, without any harm. Twenty-eight patients with typhoid (bacteriologic diagnosis) were treated by Wherry et al. in this manner in Cincinnati and in Mexico City by daily subcutaneous inoculations with from 82,000,000 to 164,000,000 formaldehyde treated bacilli. The results of this treatment, together with data collected from sixty-eight control cases, seem to show that the course of the disease is shortened, the temperature uniformly showing a tendency to drop to normal after the seventh or eight dose and then coming to normal by irregular lysis. The average duration of the fever in the treated cases was 27.5 days, while that in the controls was thirty-nine days. The incidence of complications seems decreased, averaging 7 per cent in the treated, and 36 per cent in the untreated. Convalescence is shortened for those patients treated early in the course of the disease. The death rate is decreased from 10 per cent for the untreated to zero for the treated. The authors express the hope that others will help to collect enough data to make a rigid statistical analysis possible.

Identity of Döderlein's Bacillus.—Thomas asserts that Döderlein's vaginal bacillus is *Lactobacillus acidophilus*. This organism is present in less than 10 per cent of normal vaginas in children. It gets into the vagina by exterior passage from the intestinal tract, and can be introduced into the vagina by feeding a culture by mouth. It lives and develops acid either from a secretion of the vagina or in conveyed fermentable intestinal material or both. The organism is not present in the vagina in cases of gonococcal vaginitis. The organism has an inhibiting effect on the growth of the gonococcus in vitro, and *Lactobacillus acidophilus* vaginal implantation may present a rational cure for gonococcal vulvovaginitis and other gonococcal infections.

Mexican Typhus: Tabardillo.—Over 90 per cent of the male guinea-pigs inoculated with the virus of Mexican typhus (tabardillo) presented more or less pronounced swelling and reddening of the scrotum, which was due to extensive specific lesions in the tunica cremasterica, tunica vaginalis and testes. The endothelial lining of the tunica vaginalis reacts in exactly the same manner to the presence of the virus of typhus as does the vascular endothelium. Evidence presented by Mooser indicates that a considerable amount of virus was present in the swollen tunica and that it had accumulated there within the endothelial cells during the incubation period.

Diplobacillus of Mexican Typhus.—A minute intracellular diplobacillus has been demonstrated by Mooser in sections and smears of the proliferated tunica vaginalis of guinea-pigs reacting to the virus of Mexican typhus (tabardillo). Considerable evidence is presented that this diplobacillus is the causative agent of typhus.

Journal of Laboratory & Clin. Medicine, St. Louis

13: 1097-1190 (Sept.) 1928

*Reaction of Intestinal Contents of Dogs Fed on Different Diets. W. R. Graham, Richmond, Va., and E. S. Emery, Jr., Boston.—p. 1097.
*Clinical Significance of Eosinophilia on General Medical Service. I. H. Page, K. B. Turner and J. H. Wilson, New York.—p. 1109.
Physiologic Action of Pressor X (Collip). S. Soskin, Toronto.—p. 1117.
Influence of *p*H on Selective Bacteriostatic Action of Gentian Violet on Members of Colon Group of Organisms. W. D. Stovall, M. S. Nichols, and V. Vincent, Madison, Wis.—p. 1122.
Occurrence of Paratyphoid Agglutinins in Serums Tested for Typhoid Agglutination. R. A. Kilduffe, Atlantic City, N. J.—p. 1127.
Evidence of Specificity of Intracutaneous Pollen Test in Man. R. W. Lamson and G. Alles, Los Angeles.—p. 1129.
Hemo-Agglutination in Blood of Infants. W. M. Karshner, Seattle.—p. 1134.
Blood Stain Giving More Constant Results. R. F. Feemster and O. S. Feemster, New Orleans.—p. 1139.
Rapid and Routine Preparation of Tissue Sections. E. F. Lance, Colorado Springs.—p. 1143.
Comparative Study of Efficiency of Dehydrated Endo's Agar and Krumwiede's Triple-Sugar Agar. L. M. Mack and J. M. Coffey, Albany, N. Y.—p. 1146.
Oxytocic Apparatus with Twelve Tubes. E. P. Bughee and A. E. Simond, Detroit.—p. 1151.
Rapid Quantitative Method for Determination of Acetone and Diacetic Acid in Urine. J. A. Behre, Cincinnati.—p. 1155.
Colorimetric Method for Determination of Bile Acids in Urine. I. Katayama, New York.—p. 1159.
Technic for Staining Nuclear Material in Blastomyces. E. S. Sanderson, Charlottesville, Va.—p. 1161.

Reaction of Intestinal Contents to Diet.—Results obtained by Graham and Emery suggest that the reaction of the upper intestine is acid as a result of the hydrochloric acid and bile, and that it becomes less so as the alkaline succus entericus becomes the more dominant factor. There is no evidence that two weeks' feedings of different food substances influence the *p*H of the intestinal tract.

Significance of Eosinophilia.—Page et al. report that an eosinophilia of 5 per cent or more occurred in 300 cases among 5,500 general medical cases, in all of which complete blood counts and stool examinations had been performed. The small number of dermatologic cases seen and the entire absence of cases of scarlet fever prevent this series from being wholly representative. Cases of obvious blood diseases were excluded. Of the 300 cases of eosinophilia in this series, 10 per cent occurred in parastic infestation; 13 per cent in rheumatic fever; 13 per cent in chronic pulmonary disease (chronic bronchitis, emphysema, asthma), and 10 per cent in the chronic nephritis-general arteriosclerotic group. In fully 40 per cent the eosinophilia occurred in isolated cases of various conditions and had no diagnostic significance. It is suggested that eosinophilia may be a part of the phenomenon of allergy.

Military Surgeon, Washington, D. C.

63: 477-624 (Oct.) 1928

Chemical Warfare and Its Medical Significance. H. L. Gilchrist.—p. 477.
*Succinchlorimide for Preparation of Potable Water. C. B. Wood.—p. 493.
*Riders' Leg. D. F. Winn.—p. 507.
Field Service. J. W. Grissinger.—p. 510.
Replacements and Hospitalization and Their Relation to Losses in War. A. P. Clark.—p. 542.
Recollections of Old Medical Officers: Lieutenant Colonel David Lowe Huntington. F. R. Keefer.—p. 565.

Succinchlorimide for Preparation of Potable Water.—The properties desired in a compound suitable for the preparation of small quantities of potable water are discussed by Wood. Succinchlorimide is a compound that seems to possess these properties.

Riders' Leg.—Riders' leg is a strain of the adductor muscles of the thigh. The muscles most directly concerned with adduction of the thigh are the pectineus, adductor brevis, adductor longus and adductor magnus. There is always a history of sudden and forceful gripping of the saddle in the effort to avoid becoming unseated. Pain in the thigh may be noticed at once and may be so severe as to prevent further riding. Ordinarily, however, the rider continues to remain mounted for a short time before the pain becomes acute enough to disable him. In many of the mild cases recovery takes place in from a few days to two weeks. A predisposition to recurrent injuries has been noticed. Healing may require months, especially in recurrent cases. In the early stages rest and local heat are useful. Riding should be interdicted while the acute symptoms persist and should be resumed gradually. Walking within reason may be allowed. In order to give a degree of support to the adductors, Winn has used strapping with adhesive tape with gratifying results. The adhesive tape is applied in alternating obliquely placed strips, beginning well up in the crotch, covering the upper half of the thigh, and reaching well around the anterior and posterior surfaces. The relief afforded, even in long standing cases, is immediate and striking. It is probable also that the support given by this strapping has a tendency to prevent recurrences. In cases requiring prolonged support an elastic thigh stocking gives relief. This is made from the ordinary woven elastic stocking fabric and is formed to fit quite snugly the upper two thirds of the thigh. The outer section of the stocking extends up as high as the trochanter and carries a vertical strip of whalebone to prevent wrinkling. The upper margin is slightly rounded by padding covered with chamois to obviate pressure. Two vertical strips of webbing pass upward over the iliac crest, where they are buckled to an elastic suspender passed over the opposite shoulder.

Minnesota Medicine St. Paul

11: 663-718 (Oct.) 1928

Single Track Mind. A. Sweeney, St. Paul.—p. 663.
Functional Dyspepsia. D. M. Masson, Rochester.—p. 665.
Surgical Treatment of Pharyngeal and Esophageal Diverticula: Case. C. C. Kennedy, Minneapolis.—p. 669.
Excursion of Costal Margins and of Costal Arch Following Phrenic Neurectomy. W. S. Lemon, Rochester.—p. 675.
*Hodgkin's Disease in Children: Thirty-Three Cases. C. Corbeille, Rochester.—p. 678.
Upper Urinary Tract in Differential Diagnosis of Abdominal Emergencies. T. H. Sweetser, Minneapolis.—p. 684.
Maternal, Fetal and Neonatal Mortality in Minnesota. L. M. Miles, St. Paul.—p. 690.
Physician and Sanatorium. S. A. Slater, Worthington.—p. 695.
Medical Health Economics. R. O. Jones, Chicago.—p. 697.
Duco Poisoning: Case. C. A. Undine, Minneapolis.—p. 703.
Gallstone Ileus: Case. O. A. Olson, Minneapolis.—p. 703.

Hodgkin's Disease in Children.—All of the thirty-three patients reported on by Corbeille were under 15 years and the symptoms appeared in more than half in the first five years of life. All but three of the patients were boys. More than a third of them presented histories of infectious disease at the onset of the typical symptoms. In two the symptoms appeared following trauma, and in three constitutional symptoms preceded enlargement of the lymph nodes. Cervical involvement predominated in the adenopathy. Variation in the size of the nodes occurred in about a third of the cases and is an outstanding feature in the series. In half of the cases there was mediastinal involvement. Abdominal symptoms were common, the most frequent being splenic enlargement. Of the twenty-one cases in which a tuberculin test was made, none gave a definite positive reaction and only three gave questionable reactions. Twenty-seven patients were treated by irradiation and of these thirteen are known to be dead or moribund, although all of them had shown remarkable immediate response to treatment. The average length of life was twenty-two and a half months. The life of only one was definitely prolonged, which may be accounted for by persistent treatment. He is living and comfortable at the present time, five and a half years after the onset of symptoms.

Nebraska State M. Journal, Norfolk

13: 361-400 (Oct.) 1928

Brain Abscess of Temporosphenoidal Lobe and Cerebellum. J. B. Potts, Omaha.—p. 361.
Practical Surgery. J. E. Summers, Omaha.—p. 364.
Pneumothorax, Phrenicotomy and Thoracoplasty in Advanced Tuberculosis. C. Emerson, Lincoln.—p. 367.
Medicine and Middle Class. H. von W. Schulte, Omaha.—p. 370.
Aortic Valve Disease. W. D. McGrath, Grand Island.—p. 374.
Chronic Intussusception: Case. J. F. Langdon, Omaha.—p. 375.
Internal Derangement of Knee Joint: Commoner Disabilities of Knee. J. E. M. Thomson, Lincoln.—p. 378.
Certain Clinical and Pathologic Aspects of Renal Malignancy: Six Cases. B. C. Russum and F. A. Neisius, Omaha.—p. 382.
Hyposensitization in Treatment of Asthma Due to Animal Hairs. J. E. Meyer, Columbus.—p. 389.

New England J. Medicine, Boston

199: 651-702 (Oct. 4) 1928

Cesarean Sections at Hartford Hospital, 1904-1927. J. R. Miller, Hartford, Conn.—p. 651.
*Diagnosis and Treatment of Enlarged Thymus by Roentgen Ray. F. W. O'Brien, Boston.—p. 657.
*Amniotic Fluid Concentrate in Prevention of Adhesions. H. L. Johnson, Boston.—p. 661.
Outbreak of Typhoid Traced to Corned Beef Infected by Carrier. C. L. Scamman and F. C. Forsbeck, Boston.—p. 664.
Why Thurber Medical Association Has Lived for Seventy-Five Years. J. M. French, Milford, Mass.—p. 665.
Childhood Tuberculosis and Its Relation to Campaign for Prevention of Disease. R. B. Kerr, Manchester, N. H.—p. 669.
Precautions Essential in Submission of Cadaver Material for Chemical Examination. C. D. Howard, Concord, N. H.—p. 675.
Some Uses of Sugar in Surgery. S. Rushmore, Boston.—p. 679.

Roentgen Therapy of Enlarged Thymus.—Observation has convinced O'Brien that it would appear not only desirable but requisite, until such time as more exact knowledge or experience shall warrant a contrary opinion, to prescribe radiation therapy for those children presenting roentgen-ray evidence of "broadened mediastinal shadow" without symptoms in whom general anesthesia or surgery is contemplated.

Amniotic Fluid Concentrate in Prevention of Adhesions.—The employment by Johnson of amniotic fluid concentrate in clinical and laboratory trial has proved it the equal of whole fluid. The employment of this concentrate has eliminated the fear of infection and foreign protein reaction in the use of amniotic fluid. The effects of human and cow fluid on serous surfaces are practically identical. The mode of action of amniotic fluid on serous surfaces is not entirely apparent, but some cognizance must be taken of its ability to hasten coagulation and its probable function as a lubricant. It is not an irritant or dehydrating agent. Amniotic fluid may be applied to all serous surfaces. The precentage of effectiveness of this new agent is conservatively estimated to be 70. Amniotic fluid should be reserved for use in clean cases. Its effect on postoperative convalescence is an apparent shortening of the usual period of distress. The series of clinical cases presented offers reasonable proof that the use of amniotic fluid in the human abdomen is safe.

New Orleans Medical and Surgical Journal

81: 237-308 (Oct.) 1928

Medical Expert Testimony. S. L. Herold, Shreveport, La.—p. 237.
Full-Time Health Program Developed in Mississippi Valley Following Flood. J. G. Townsend, Kansas City, Mo.—p. 245.
Prophylaxis of Cancer: Cervix Uteri. C. J. Miller, New Orleans.—p. 253.
Blastomycosis. A. Castellani, New Orleans.—p. 260.
Diet: Important Factor in Health and Disease. A. Eustis, New Orleans.—p. 278.
Problems of Industrial Surgeon. D. Walley, Lumberton, Miss.—p. 281.

Spinal Anesthesia. J. K. Avent, Grenada, Miss.—p. 284.
Technic for Clinical Blood Pressure Measurements. C. Brooks, University, Ala.—p. 287.
Progressive Neural Muscular Atrophy (Peroneal Type): Two Cases in Brothers Associated with Mental Symptoms. W. J. Cavanaugh and H. Tucker, Meridian, Miss.—p. 290.

Northwest Medicine, Seattle

27: 409-454 (Sept.) 1928

Intestinal Obstruction and Intestinal Toxemias. C. A. Dragstedt, Chicago.—p. 409.
*Biochemistry and Geochemistry of Iodine: Etiology and Prophylaxis of Endemic Goiter. G. Lunde, Oslo, Norway.—p. 412.
Malfactions of Thyroid: Basic Principles Underlying Treatment. J. R. Coffey, Portland, Ore.—p. 418.
Tuberculosis of Intestine: Apparently Primary Case. P. W. Sweet, Centralia, Wash.—p. 423.
Etiology of Carcinoma: Statistics. D. H. Nickson, Seattle.—p. 428.
Cancer Statistics. S. F. Wiltsie, Seattle.—p. 431.
Agranulocytosis: Case. D. M. Dayton, Tacoma, Wash.—p. 436.
Our Inheritance and Responsibility in Medicine. C. R. Scott, Twin Falls, Idaho.—p. 438.

Biochemistry and Geochemistry of Iodine.—The iodine metabolism of the sea is discussed by Lunde. He says: The iodine that is released from weathered rocks is carried by the rivers out to sea. Here it is absorbed by the plankton just like other nutritive salts from the land (especially phosphorus and calcium compounds). The production of plankton is periodic and depends on the Norwegian coast chiefly on the supply of nutriments from land. It is especially rich during the melting of snow in spring. At that time the great quantities of iodine which have been released by the erosion of rocks in the course of the winter are carried more or less suddenly out into the sea. During and immediately after the flowering of plankton in the upper layers of the ocean, only a very small quantity of it is utilized as food for the lower or higher species of animals (especially zooplankton). The great mass sinks to the bottom, and some of this plankton serves there as food for the invertebrates of the bottom fauna. The bottom fishes obtain their iodine mostly from these animals. On the decay of the various plants and animals a part of the iodine is once more set free and can then be absorbed anew by plants. But large quantities are withdrawn from the circulation by the fact that they sink to the bottom with the remains of plants and animals and pass over into the sediments. There is also a constant reciprocal action between the surface of the sea and the atmosphere. According to von Fellenberg, iodine is set free at the surface by certain processes; it escapes and passes over into the atmosphere. It is carried back into the sea again by precipitation. As the concentration of iodine in the sea is much higher than in fresh water, it is clear that sea air will be considerably richer in iodine than inland air. This fact is of no little importance to both men and animals in districts along the sea coast, for experiments have shown a higher concentration of iodine in the surrounding nature and, therefore, in all organisms in coastal districts as compared with corresponding inland organisms.

Occupational Therapy and Rehabilitation, Baltimore

7: 305-378 (Oct.) 1928

Organization and Work of Industrial School for Crippled and Deformed Children. V. K. Brackett, Boston.—p. 305.
Promoting Desirable Attitudes in Mentally Sick. J. E. Davis, Perry Point, Md.—p. 313.
Occupational Therapy with Ex-Service Man. E. M. Cates, Aspinwall, Pa.—p. 319.
Relating Occupational Therapy to Rehabilitation. M. Jenkins, Fort Lyon, Colo.—p. 323.
Applying Occupational Therapy for Neurotic and Psychotic Patients in Government Hospitals. L. R. Payne, Perry Point, Md.—p. 327.
Work in Occupational Therapy Center: Methods, Crafts and Equipment. H. G. Price, Towson, Md.—p. 331.
Hand-Loom Weaving in Occupational Therapy. M. M. Atwater, Cambridge, Mass.—p. 339.
"Three R's" of Occupational Therapy. W. R. Dunton, Jr., Boston.—p. 345.

Physical Therapeutics, Baltimore

46: 423-460 (Sept.) 1928

Dangers of Ultraviolet. A. D. Willmoth, Louisville, Ky.—p. 423.
Electrosurgery. E. N. Kime, Indianapolis.—p. 427.
Forty Years of Medicine and Surgery. W. B. Snow, New York.—p. 435.
Some Teaching Courses in Physical Therapy. J. C. Elsom, Madison, Wis., and Others.—p. 438.
Light Integral in Life. F. de Courmelles, Paris.—p. 443.

Surgery, Gynecology and Obstetrics, Chicago

47: 449-592 (Oct.) 1928

*Etiology of Pulmonary Abscess. M. Joannides, Chicago.—p. 449.
*Ganglion: Treatment. L. Carp and A. P. Stout, New York.—p. 460.
*Ulcer Cruris: Etiology, Pathogenesis and Treatment. H. O. McPheeters, Minneapolis.—p. 469.
Acute Thyroiditis: Sixty-Seven Cases. E. C. Burhans, Philadelphia.—p. 478.
*Bactericidal Activity of Hexylresorcinol (Solution S. T. 37) on Wound Surfaces. W. A. Feirer and V. Leonard, Baltimore.—p. 488.
Surgical Treatment of Gastric and Duodenal Ulcer. H. W. Louria, New York.—p. 493.
*Relation of Histologic Structure to Prognosis of Carcinomas of Uterine Cervix. W. C. Hueper, Chicago.—p. 502.
Experimental Study of Muscle Atrophy. R. K. Lippmann and S. Selig, New York.—p. 512.
*Stripping of Os Calcis. A. Steindler, Iowa City.—p. 523.
Fredet-Rammstedt Operation for Congenital Pyloric Stenosis. M. B. Clopton and A. F. Hartmann, St. Louis.—p. 527.
*Improvements in Perineal Prostatectomy Permitting Primary Wound Closure and Healing Without Drainage. T. E. Gibson, San Francisco.—p. 531.
Pregnancy Terminated by Cesarean Section After Ureteral Transplantation into Sigmoid. C. W. Eberbach and J. M. Pierce, Ann Arbor, Mich.—p. 540.
Pathogenesis and Surgical Treatment of Gastric Crisis of Tabes: Neuroramisectomy: Seven Cases. L. van Bogaert and J. Verbrugge, Antwerp, Belgium.—p. 543.
Felter Yoke as Prophylactic Measure for Postoperative Pressure Paralysis Following Use of Trendelenburg Position. L. G. Baldwin, Ann Arbor, Mich.—p. 554.
Varicocele: 500 Cases. M. F. Campbell, New York.—p. 558.

Etiology of Pulmonary Abscess.—Joannides reports his results in the experimental production of pulmonary abscesses. The following factors are of great importance in the production of lung suppuration: 1. The abolition of the pharyngeal and cough reflexes in general anesthesia. 2. The presence of mucus or blood in the mouth during anesthesia. 3. The presence of certain characteristic micro-organisms in the buccal cavity (fusospirochetes). 4. The presence of chronic infection in the nose, mouth and paranasal sinuses. 5. The dimensions and the physical state of the aspirated material. Thus the smaller the foreign body, the further it will reach in the bronchial tree. A thick, tenacious fluid that has a low specific gravity is less likely to stay in the lung than a thinner, less tenacious, heavier fluid. 6. The action of the cilia, which clear the trachea and bronchi by rhythmic movement. 7. Specific immunity in the lung against certain organisms. The lesions may be single or multiple, acute or chronic. Joannides has been able to produce chronic abscesses by allowing only small amounts of pus to trickle down from the nose of the dog into the lung. On the other hand, he has found abscess formation within twenty-four hours after the injection. The abscesses varied in size from a few millimeters to 5 cm. Some abscesses ruptured into the pleural cavity and caused a fatal acute pleurisy with effusion. Usually at the site of the abscess Joannides found fibrinous or fibrous adhesions between the lung and the neighboring organ or the chest wall. In the acute abscesses a wall was not well formed but in the more chronic types he found a wall from 1 to 3 mm. thick and the contents varied from pus to thick cheesy material. The abscess does not necessarily communicate with the bronchus in these aspiratory experiments. In one experiment in which Joannides obtained the largest abscess, he could not find any communication of the abscess with a bronchus. The wall surrounding the abscess was uniformly tough. The pneumonia that was noticed was usually of the lobar type. Foreign bodies implanted in the lung induced the development of a thick walled foreign body sac that did not show any evidence of infection and that surrounded this body very intimately. This lesion was produced by the implantation of peanuts, beans, agar agar and pennies. When blood with staphylococcus was injected intrabronchially and the animal developed lesions, Joannides noticed a thick kernel-like induration without a soft center. This varied in color from red to grayish yellow. On section a hard cartilage-like center was found.

Treatment of Ganglion.—Carp and Stout believe that ganglions are cysts resulting from mucinous degeneration of connective tissue. They occur generally in or are attached to capsules of joints or tendon sheaths but do not communicate primarily with joints or sheath spaces. The degeneration proceeds with fibrillation of the collagen fibers and accumulation of mucin both within the cells and in the intercellular spaces. This

results finally in the disappearance of cells and fibers in a number of adjacent areas. These embryonic cysts coalesce and lead to the formation of larger cavities. The cause of this degeneration still remains obscure but it is probably not due to any lack of vascular supply. Although there is evidence of cell proliferation, they are not of the opinion that ganglions are neoplasms. They occur most frequently about the wrist joint, the volar surfaces of the fingers, the dorsum of the foot, and the popliteal region. Ganglions are most frequently found in females of slight build in the second, third and fourth decades. The authors are not convinced that trauma plays a major rôle in their production. The chief symptoms and signs are swelling, pain, interference with function and tenderness. A differential diagnosis must be made from tuberculosis of the joint or tendon sheath, lipoma, myxoma, fibroma, osteoma, sarcoma, bursitis and aneurysm. Late results after various therapeutic measures have convinced the authors of the advisability of nonoperative treatment. So many ganglions disappear spontaneously and after breaking and pressure, aspiration and pressure, or aspiration with injection of a chemical irritant and pressure, that operative therapy should be recommended only when nonoperative treatment has failed and when there are persistent troublesome symptoms, signs or deformities. Careful, complete excision of ganglions under strict asepsis and with a bloodless field will probably not be followed by reappearances.

Treatment of Varicose Veins by Injection.—McPheeters' report is based on the care and treatment of 348 cases of varicose veins, in sixty-five of which there have been ulcerating complications. He says: Ulcer cruris is the end-result of the trophoneurotic disturbance in the leg and foot resultant from the stagnation of blood serum in the tissues secondary to varicose veins. The attempt to cure the ulcer first and the veins second is wrong in theory and in practice. The varicose veins are obliterated far better by the injection treatment than by operation. The supportive bandage for the affected extremity with the rubber sponge pressure over the ulceration is the oldest and yet the most efficient treatment of the present day. Judicious employment of the skin graft at the proper time greatly shortens the period of healing. In all the long standing cases with extensive involvement there must be continued support for long periods of time to avoid recurrence. The duration and extent of the support must be decided in each individual case. All varicose ulcers can be healed by the injection treatment and kept healed. If they cannot, it means that the operator has not been keen enough to locate the vein which causes the condition and which is often under the ulcer bed, or that he has been negligent in giving the extremity the necessary lasting support.

Bactericidal Activity of Hexylresorcinol.—Feirer and Leonard give a simple technic by which the suitability of any given germicide for use as a prophylactic against infection in accidental or operative wounds may be readily determined, and describe the results obtained in the rapid disinfection of experimentally infected wounds with hexylresorcinol in 30 per cent aqueous glycerin (solution S. T. 37). The germicidal efficiency of this solution is stressed. The authors point out that the problem of efficient wound prophylaxis is that of promptly killing off vegetative contaminants and of leaving enough of the prophylactic agent in the wound to prevent the germination of spores. Moisture may be, under ordinary circumstances, absolutely essential to disinfection by chemical means. To be really effective, the germicide should be present in solution. Germicides which evaporate rapidly, such as tincture of iodine, may be logically suspected of exerting only a very transient bactericidal action on tissue surfaces. Whether or not bactericidal activity continues after evaporation, through the deposit of the solid constituents of the solution in the tissue moisture and in stained tissue, is a highly controversial point, and little evidence of experimental nature can be offered for one or the other view. Consideration of this point, however, leads one inevitably to the conclusion that, in the absence of satisfactory proof, the safest method of applying a prophylactic agent would appear to be by means of wet dressings or at least by means of a solution which evaporates slowly.

Carcinoma of Cervix: Histologic Structure and Prognosis.—Report is made by Hueper of a method of numerical evaluation of histologic malignancy freed to a large extent from the influence of individual interpretation by the introduction of twenty different factors representing histologic qualities of the parenchyma and the stroma of carcinomas. The sum of the evaluations or the "histologic malignancy index" possesses a definite relationship to the end-result.

Stripping of Os Calcis.—Two hundred and thirty-four stripping operations on the os calcis have been performed by Steindler. The best results were obtained in those cases of infantile paralysis in which the stripping and wrenching operation was preliminary to other, mainly stabilizing, operations. Of thirty-eight cases in this group, thirty-four, or almost 90 per cent, showed good results, and four showed fair results. Of ninety-four cases in this group in which the stripping and wrenching operation alone was done, seventy-seven, or a little more than 80 per cent, showed good results, while fifteen cases, or 16 per cent, showed fair results, and two cases, or about 4 per cent, showed poor results. In congenital clubfoot deformity in which stripping was done, together with the wrenching and manipulation of the foot, 97 per cent showed good results as far as the correction of the deformity was concerned and only 3 per cent showed fair results. In thirteen severer cases of congenital clubfoot deformity in which the stripping and wrenching was only the preliminary step, all but 8 per cent showed good results. Poorer results were obtained in the twelve cases of the progressive cavus deformity of spina bifida. In eight cases in which stripping and wrenching was performed as the only operation, good results were not obtained; five cases showed fair results, and three poor results. In the four cases in which stripping and wrenching were preliminary to other operations, two showed good results; one, fair results and one, poor results. The progressive type of the deformity accounts for the much poorer results of the operation in this group. It certainly appears from the results that the stripping and wrenching operation alone cannot control the situation and that secondary, stabilizing operations are necessary. Of the nine patients operated on for clubfoot and the cavovarus deformity seen in spastic paralysis, seven were treated by stripping and wrenching alone, with two good results, four fair results and one poor result. In two cases the stripping and wrenching operation was preliminary to other stabilizing operations, with one good and one poor result. In all four groups embracing 201 cases, good results were obtained in 112 with stripping and wrenching alone, and also in fifty cases in which this operation was preliminary. Poor results were obtained in twenty-five cases treated by stripping and wrenching alone, or 16 per cent of this group, while poor results were obtained in six cases, or 4 per cent, in which the stripping and wrenching constituted the principal operation. On the other hand, of fifty-eight cases of all groups in which the stripping and wrenching was done as a preliminary operation, in fifty, or 85 per cent, good results were obtained; in five, or 9 per cent, the results were fair; and in three, or 6 per cent, the results were poor.

Improvements in Perineal Prostatectomy.—Modifications in the technic of perineal prostatectomy, together with methods of dealing with bleeding, are outlined by Gibson which should, in a high percentage of cases, permit primary wound closure and healing without urinary drainage and thus add materially to the brevity and comfort of the patient's stay in the hospital. The technic employed is essentially that of Young except that the patient is placed in the ordinary lithotomy position; a special instrument is inserted into the rectum to guard against injury to that structure; a midline incision is made in the prostate which permits easy closure following enucleation; under careful visualization bleeding is entirely checked by suture and sponging with warm 10 per cent solution of ferric subsulphate (Monsell's solution), and the wound is closed tightly in layers with mattress sutures of number 2 chromacized gut, without drainage. All drainage is taken care of by an adequate suction apparatus attached to a retention catheter in the urethra. Four illustrative cases of perineal prostatectomy are reported in which healing occurred by first intention without urinary drainage through the wound at any time. Three of the patients were discharged from the hospital two weeks after operation, in excellent condition. The fourth patient was not allowed to leave the hospital until three weeks after operation because of the occurrence of a mild attack of epididymitis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Actinotherapy, London

3: 101-120 (Sept.) 1928

*Preventive Irradiation of Children Against Rickets. K. Huldschinsky.—p. 103.
Treatment of Lumbago and Sciatica by Ultraviolet Irradiation. P. Hall and Others.—p. 105.
Heliotherapy on High-Veld. L. E. Hertslet.—p. 107.
Ultraviolet Radiation in Treatment of Diseases of Urethra, Bladder and Uterus. A. Bernay.—p. 110.

Prevention of Rickets by Ultraviolet Rays.—Huldschinsky advocates the prevention of rickets by exposure to ultraviolet rays at an age when bending of the bones never occurs, i. e., in the first six months of life. He reports that in a very poor district of Berlin, every child received a course of irradiations for one month when about 3 months old. In every case the severe form of rickets was prevented, but the disease in a mild form could not always be prevented. There was found to be a difference between children who showed slight signs of rickets in the third month or earlier, and those who were found to be free of it at that age. Of the former, 40 per cent were found to be rickety when 1 year old, and of the latter, only 10 per cent. They showed either open fontanels or kyphosis when sitting, or the rickety rosary, thick joints, or several of these symptoms combined. They were never found to be affected with florid rickets.

British J. Dermatology and Syphilis, London

40: 325-388 (Aug.-Sept.) 1928

*Absorption of Salicylic Acid by Human Skin. H. Leslie-Roberts.—p. 325.
Systemic Blastomycosis: Fatal Case. D. C. Smith, H. C. Turner and E. S. Sanderson.—p. 344.

Absorption of Salicylic Acid by Human Skin.—Leslie-Roberts asserts that pure synthetic salicylic acid can be transported through the epidermis into the connective tissue and thence into the blood stream. The colloids of the connective tissues retain the drug by adsorption, and from these surfaces it is liberated gradually, passes into the blood, and is mainly excreted by the kidney. The excreted portion may be estimated colorimetrically in milligrams per hundred cubic centimeter of urine, and if the quantity of urine voided in the twenty-four hours is known, the total urinary excretion of salicylic acid may be calculated. Absorption may take place from petrolatum, alcohol and water. The data do not admit of a definite answer to the question as to which of these solvents is the most favorable for absorption, though probably petrolatum is the best solvent. The permeability of the skin to salicylic acid varies in different individuals according to the physicochemical condition of the inner environment. In respect to the mechanism of absorption, it may be said that although solid keratin is itself quite impervious to salicylic acid, it nevertheless plays an important part in the translocation of the acid through the skin. It acts through its extraordinary power of adsorbing the acid, whereby a supersaturated solution is formed on the surface of the skin. It is from this surface layer that the fraction transported is drawn and not from the mass of solvent. The chemical form in which the acid is transported is still open to discussion. The powerful effect of salicylic acid on extravasated white blood cells is probably due to the ease with which it penetrates these cells, the resulting acidosis leading to their autolysis and final disintegration. This fact and its power of diffusing through the skin places salicylic acid in a unique position among the remedies employed in the treatment of inflammatory conditions of the skin.

British Medical Journal, London

2: 475-514 (Sept. 15) 1928

Acute Conditions in Lower Abdomen of Female. W. W. Chipman.—p. 475.
Falling Birth Rate: I. Biologic Aspect. F. A. E. Crew.—p. 477.
Id.: II. Economic Aspect. W. J. Roberts.—p. 479.
Id.: III. Medical Aspect. T. Horder.—p. 483.
Id.: IV. Indications from Statistics. F. E. Barrett.—p. 485.
*Osteitis Fibrosa of Tibia. J. L. Cox.—p. 488.
Case of Partial Staphyloma of Cornea. R. Y. Stones.—p. 488.
*Tetany Involving Rectus Abdominis. S. Lerner.—p. 489.
Triple Intussusception in Elderly Woman. J. A. C. Macewen.—p. 489.
Hernia of Intestine Through Mesenteric Hole. J. White.—p. 490.
Foreign Body (Catheter) in Bladder. V. L. Ferguson.—p. 490.
Von Recklinghausen's Disease Associated with Fibroma of Appendix. T. Hoey.—p. 490.
Accidental Snaring of Two Small Stones by Catheter. W. F. Brayne.—p. 490.

Osteitis Fibrosa of Tibia.—Cox reports the case of a girl, aged 18, who complained of "cutting pains" in the right knee, which gave out when she was walking. The pains were intermittent, and did not incapacitate her from work. Next she noticed a swelling about the middle of the tibia, and the pain became definitely worse. No history of any blow or injury could be elicited. An anteroposterior roentgenogram of the right tibia and fibula showed a small area of rarefaction at the site of the swelling. A provisional diagnosis of chronic osteomyelitis was made, and the patient was kept in bed for a fortnight. The pain subsided and the patient was allowed to be up. Three months later she complained of a gradual onset of pain in the right hip joint, saying that she got very stiff on sitting down and could not walk on rising. On examination one-fourth inch true shortening of the right leg was found, with marked limitation of movement on abduction, and some tenderness on pressure over the joint. A roentgenogram showed marked rarefaction of the neck of the right femur, with a spontaneous fracture extending about half-way across it. The upper half of the shaft also appeared to show rarefactive changes. The patient was put to bed for three months and given parathyroid and calcium thrice daily. She began to walk again a few months later. The roentgenogram showed rather more marked rarefaction in the neck of the right femur, but the fracture appeared to be healed. Six months later, the patient again complained of some increase in the size of the tibial swelling, with slight intermittent pain in this situation. A lateral view of the tibia revealed an extensive area of rarefaction with marked thinning of the bone.

Tetany Involving Rectus Abdominis.—Lerner's patient, aged 53, of rather poor physique, complained of symptoms of cough, coryza, malaise and backache of two days' duration. These symptoms did not inconvenience him so much, however, his chief cause of complaint being agonizing pains in the upper abdomen, which came on at any time during the day and night. So severe were they that sleep was impossible. Nothing seemed to relieve them, and they disappeared after five or ten minutes, only to return. During these cramplike attacks there gradually appeared two somewhat sausage-shaped swellings in the epigastrium, extending transversely on either side of the midabdominal line. They were slightly thicker toward the midline, tense and of boardlike consistency, and there could be no doubt that they were the upper segments of the rectus abdominis in spasm. Further examination revealed hyperexcitability of the face, and tapping over the pes anserinus elicited fibrillary twitchings of the facial muscles on that side not quite amounting to spasm. Lerner is convinced that this was a case of toxic tetany involving the rectus abdominis.

Edinburgh Medical Journal

35: 497-564 (Sept.) 1928

*Examination of Gastric Contents as Aid to Diagnosis of Carcinoma of Stomach. D. M. Dunlop.—p. 497.
Recurrent Spontaneous Pneumothorax. A. Mills.—p. 540.

Diagnosis of Carcinoma of Stomach.—Dunlop states that gastric carcinoma may be diagnosed or excluded, in the vast majority of cases, by examination of the stomach contents alone. The results of the gastric analysis on which importance should be placed, in the diagnosis of this disease are the presence of (*a*) achlorhydria; (*b*) lactic acid; (*c*) blood, and (*d*) evidences of stagnation. Absence of free acid and the presence of lactic acid are found in the great majority of patients suffering from gastric carcinoma, and such a dual finding probably occurs in no other condition, with the exception of carcinoma of the esophagus. The absence of lactic acid in stomach contents which show no free acid, or the discovery of large quantities of free hydrochloric acid, makes the presence of gastric carcinoma exceedingly improbable. The absence of free acid and the presence of lactic acid are not necessarily evidence of an advanced condition of the carcinoma, nor is the presence of free acid necessarily evidence of an early stage in

the growth. Lactic acid found in the stomach is not invariably caused by the fermentation of stagnating gastric contents, but may be sarcolactic acid produced by the tissues involved by the growth. It may therefore occur in the stomach contents when no pyloric stenosis is present. The congo red and dimethyl tests for free hydrochloric acid in the gastric contents are not trustworthy, since (*a*) they do not indicate free hydrochloric acid when it is present in very small quantities, and (*b*) they react to large quantities of lactic acid in the same way that they react to free hydrochloric acid. Gunzberg's test, when the reagent is freshly prepared, is an entirely reliable one for the presence of free hydrochloric acid. Uffelmann's test for lactic acid is valueless, as it gives a positive reaction with many other substances besides lactic acid which may be found in the stomach contents. MacLean's test for lactic acid is simple and trustworthy.

Glasgow Medical Journal

110: 129-192 (Sept.) 1928

Treatment of Tuberculous Disease of the Hip. J. Taylor.—p. 129.
*Abnormality in Composition of Human Fat. S. V. Telfer.—p. 137.
Results of Radium Treatment in Carcinoma of Cervix Uteri. G. T. Mowat.—p. 142.

Abnormality in Composition of Human Fat.—Telfer relates the case of a woman, aged 35, who had suffered from abdominal pain, sickness and vomiting. Insulin and dextrose were administered but without appreciable effect, and she died eleven hours after admission without having regained consciousness. Six years previously, she had been admitted with abdominal pain which at first was considered to be due to panniculitis of the abdominal wall; but four days after admission the pain was associated with tenderness and rigidity in the right epigastric region and feverishness. An operation for cholelithiasis was performed. No gallstones were found, but the pancreas was hard and there was evidence of fat necrosis, which was confirmed by histologic examination of a piece of omentum removed at operation. The urine was free from sugar at this period. A year later she was found to be suffering from diabetes, the blood sugar on dextrose administration rising to 0.3 per cent. A suitable dietary was prescribed, and she was instructed in the use of insulin. At postmortem the subcutaneous fat was unusually solid and pitted on pressure, though the temperature at which the body had been preserved was not unduly low. On examination the fat was found to contain a smaller proportion of olein and a correspondingly greater proportion of the glycerides derived from the saturated fatty acids (stearic and palmitic) than are normally found in human fat.

Lancet, London

2: 586-636 (Sept. 22) 1928

Rheumatic Heart Disease in Childhood. F. J. Poynton.—p. 586.
Regulation of Respiration. R. Gesell.—p. 589.
*Serum Treatment of Cutaneous Anthrax. A. E. Hodgson.—p. 594.
Treatment of Epidermophytosis of Toes (Mango Toe): Certain Other Forms of Epidermophytosis by Fuchsin Paint. A. Castellani.—p. 595.
Cultivation of Vaccinia Virus Without Tissue Culture. H. B. Maitland and M. C. Maitland.—p. 596.
Gliosarcoma of Retina in Child of Three. E. C. Hudson.—p. 598.
Cooking of Liver for Treatment of Pernicious Anemia: Recipes. C. E. Pollock.—p. 598.
*Multiple Compound Fracture of Skull with Recovery. C. R. H. Tichborne.—p. 599.

Serotherapy of Cutaneous Anthrax.—Hodgson has treated thirty-one cases of cutaneous anthrax solely with serum, without any resort to excision of the "malignant pustule." With few exceptions the intravenous route has been chosen for the injection of serum. The earlier the serum is given, the more quickly and easily is the advance of the local lesion and the resultant absorption of toxins arrested. Up to three days, generally speaking, the disease is controllable, but after this the treatment rapidly becomes more anxious and prolonged. The effects of the serum are evidenced locally in about twenty-four hours by a cessation of further inflammatory swelling; the formation of vesicles abates, the temperature may be somewhat lower, and the patient feels better. Later the induration shows a slow though definite decline and the part is less swollen. Coincident with these changes the temperature and the pulse rate fall, usually by a lysis covering two, three or more days, according to the severity of the case. Meanwhile the vesicles have ruptured or collapsed, and the central dark necrotic zone shows around itself a narrow ring of inflammatory "casting off" reaction. It is Hodgson's practice to continue giving serum daily until the temperature has definitely fallen to a normal level. The healing of the local focus varied in length of time from fourteen days to thirty-five days, according to the area of the initial lesion and the mass of the resulting slough. Hodgson has also given antianthrax serum in 10 cc. doses, subcutaneously, as a prophylactic, to persons definitely exposed to anthrax infection, in nine instances. These included sanitary inspectors, farmers and slaughterers who handled the carcasses of cows which had died of anthrax. Although skin scratches or other open wounds were present, none of the men injected developed the disease.

Multiple Compound Fractures of Skull with Recovery.—In Tichborne's case, besides a scalp wound 3 inches long and reaching to the bone, there were five complete compound fractures of the vault of the skull. The fractures were: one left temporal, one frontal, one right parietal, one left parietal and one fracture of the occipital bone 5 inches long, with a 1½ inch gap; all these fractures communicated with the surface of the brain, and in all cases the cerebral meninges were exposed. The injuries were 3 days old; the head was wrapped in a filthy blood-stained native cloth and was covered with mud; the several muscles and the torn scalp were sloughing, and a general septic state prevailed. Under these conditions the prognosis seemed hopeless; nevertheless the patient did live.

Encéphale, Paris

23: 501-568 (June) 1928

Curable Forms of Insanity Simulating Schizophrenia. S. C. Rossi.—p. 501.
Massive Cerebral Hemorrhage. J. Lhermitte and N. Kyriaco.—p. 508.
Psychology of Schizophrenia. A. Stocker.—p. 518.
*Epidemic Encephalitis and Epileptic Attacks. H. Claude, A. Lamache and J. Cuel.—p. 522.
Case of Pseudosclerosis. P. E. Núñez.—p. 527.

Epidemic Encephalitis and Epileptic Attacks with Hyperthermia.—Claude et al. report the case of a woman, aged 33, who gave a history of repeated epileptiform attacks with hyperthermia. On the bases of the symptoms a diagnosis of brain tumor was made; at necropsy a brain tumor was not found, but lesions of encephalitis were demonstrated.

Journal d'Urologie Médicale et Chirurgicale, Paris

26: 113-192 (Aug.) 1928

Structure of Testicular Transplants. E. Retterer and G. Alexandescu.—p. 113.
*Urethrorrhagia Following Urethral Dilations. V. Vintici.—p. 133.
*Hygroma of Kidney. G. S. Epstein.—p. 141.
*Bladder and Ureteral Calculi. Hortolomei.—p. 152.
*Endovesical Electrocoagulation of Tumors. O. Keller.—p. 156.

Urethrorrhagia Following Urethral Dilations.—Vintici reports a case of fatal urethrorrhagia following urethral dilation in a man, aged 56; at necropsy only suffusions of blood in the floor of the bladder and in the posterior urethra were found.

So-Called Hygroma of Kidney.—After giving the case reports of the eight cases of hygroma of the kidney reported in the literature, Epstein reports a personal case: at the necropsy of a woman, aged 45, who died of cancer of the uterus, the left kidney was found enclosed in a cyst filled with transparent fluid, in much the same manner that the testis is found in the cavity of a hydrocele.

Large Bladder Calculus and Multiple Ureteral Calculi.—Hortolomei reports the case of a man, aged 65, who did not give a history of renal colic in spite of the fact that he had passed thirty-six ureteral calculi during the preceding four years. At operation a bladder calculus, measuring 7 by 6 cm. and weighing 158 Gm., and forty-seven ureteral calculi were found.

Endovesical Electrocoagulation of Bladder Tumors That Are Inaccessible to Ordinary Sounds.—Keller describes a sound which he invented for the destruction by electrocoagulation of papillomas situated far forward in the neck of the bladder, in diverticula, behind an hypertrophied prostate, or in deformed bladders. The sound is so made that in passing out of the cystoscope it turns upward and backward in the form of a spiral.

Paris Médical

2: 217-228 (Sept. 15) 1928

Nervous Disturbances in Lumbar Rheumatism. P. Harvier, P. Delafontaine and J. Gouyen.—p. 217.
Rôle of Reticulo-Endothelial System in Origin of Monocytes. H. Gounelle.—p. 224.
*Treatment of Psoriasis. Masson.—p. 228.

Treatment of Psoriasis.—In the treatment of psoriasis, Masson uses both chrysarobin ointment and ultraviolet rays. City patients apply the ointment at night and remove it in the morning with sweet oil of almonds and a piece of cotton. For the ultraviolet ray part of the treatment a 3,000 candlepower "transparent quartz" lamp is used; even in cases in which there are very few lesions the entire body is irradiated. The irradiations are made every other day: the first one lasting seven minutes, the second one ten, and the rest twelve minutes. The distance of the lamp from the patient should be about 60 cm. During the irradiation the lamp is moved around in such a manner that all the parts of the body receive the rays at this optimal distance of 60 cm. The author has used this treatment in fifty cases of psoriasis and has found it equally effective in all forms of this disease.

Presse Médicale, Paris

36: 1137-1152 (Sept. 8) 1928

*Prepyloric Ulcerocancer. G. Hayem.—p. 1137.
"Angor Ocularis" (Spasm of Retinal Vessels). E. Aubaret and J. Sédan.—p. 1139.
Treatment of Perivisceral Adhesions. L. Cerf and N. Pauly.—p. 1141.
Suprapubic Transverse Skin-Aponeurosis Incision. M. Sénéchal.—p. 1142.
Rôle of Potassium in Genesis of Cancer. M. Letulle and L. Vinay.—p. 1143.

Clinical Forms of Prepyloric Ulcerocancer.—From a study of ninety-four specimens of cancer of the stomach, in twenty-one of which the cancer was situated on an ulcer, Hayem claims to have definitely established the existence of a special condition which he calls "prepyloric ulcerocancer." This is the most rapidly fatal of all the diseases of the stomach. It may be divided into the following four groups: 1. Chronic, cancerized ulcer. The ulcer makes its appearance in the chronic form with paroxysms and does not differ from ordinary ulcer for a variable time, which may be as long as several years; then, suddenly, a second stage, that of cancerization, appears. From this moment on, the illness progresses so rapidly that at necropsy the lesion can be mistaken for a simple ulcer. 2. Cancer following an ulcer which appears to be healed. The patients present the characteristic signs of an ulcer; treatment results in an apparent cure. Suddenly, after from one to several years and from no appreciable cause, the condition reappears and soon the signs of cancer develop. 3. Cancer following a more or less old gastropathy which does not present the signs permitting one to make a definite diagnosis of ulcer. 4. Primary pseudocancer. At necropsy one finds the neoplasm situated on an ulcer whose presence had not been suspected. This is the most common form. In the majority of cases the cancer does not present any characteristic symptom that would render its certain recognition possible. In about one half of the cases the gastric history is negative. The first disturbances noted are connected with the cancer and are soon followed by characteristic signs. In the others one notes the previous existence of a gastropathy, without signs that could be attributed to an ulcer, and at the end of a variable time one observes the obvious signs of cancer. The previous gastric disturbances may be transient and separated by a variable interval from the cancerous stage, and usually it is impossible to determine just when the cancer began. In the majority of the cases the signs of stenosis appear suddenly and they are frequently accompanied by an intense anemia. It is important to remember that primary pseudocancer may occur in either one of two forms: the form with rapid evolution (from three to eight months) and the form with slow evolution (approximately two years).

36: 1153-1168 (Sept. 12) 1928

*Suprarenal Tumors and Hypertension. L. Langeron and P. Lohéac.—p. 1153.
*Treatment of Diabetes Insipidus by Nasal Route. A. Choay and L. Choay.—p. 1155.
Congestive Attack and Reaction in Chronic Arthritis. L. Duvernay.—p. 1156.
*Ultraviolet Ray Emanations from Organic Phosphatides After Their Irradiation. C. Serono and A. Cruto.—p. 1158.

Suprarenal Tumors and Hypertension.—From a study of two cases of tumor of the suprarenals, Langeron and Lohéac conclude that: 1. Primary tumors of the suprarenal glands may explain the pathogenesis of apparently primary or essential hypertension. One type consists of paroxysmal hypertension and is associated with paragangliomas; it is sufficiently characteristic to be recognized. A second type of continuous hypertension may be caused by epitheliomas of the suprarenal cortex; clinically it presents nothing characteristic. 2. The fact that suprarenal tumors accompanied by hypertension, regardless of their histologic structure, are invariably richer than normal in epinephrine, leads one to believe that this high epinephrine content must constitute the common pathogenic mechanism by which all these different tumors lead to arterial hypertension. The study of suprarenal tumors therefore throws light on the subject of the pathogenesis and the pathogenic mechanism of arterial hypertension in general.

Treatment of Diabetes Insipidus by Nasal Administration of Powdered Posterior Lobe of Pituitary.—Choay and Choay have used this method successfully for more than five years. The powder is obtained by pulverizing posterior lobes of beef pituitary glands previously ground and dried without heat in a vacuum; this powder, if kept in a dry place, retains its activity for several months at the minimum. A practical way of giving the powder to the patient is in small, hermetically sealed tubes, each one containing, according to the case, from 0.5 Gm. to 1.0 Gm. It is better to increase the number rather than the size of the doses. In an adult in whom the polyuria fluctuates between 15 and 20 liters per twenty-four hours, the best results are obtained by the daily use of from 15 to 20 cg. of powder divided into three or four doses taken as follows: 4 cg. in the morning on awakening, 4 cg. at noon, 4 cg. at 6 o'clock and from 6 to 8 cg. at night before retiring. In the case of patients discharging less than 10 liters of urine from 5 to 10 cg. of powder divided into two or three doses suffices. In the case of patients in whom the polyuria exceeds twenty liters, mixed treatment is necessary; some prefer an injection in the morning and the doses of the powder to finish the day, whereas others prefer an injection at night and the powder during the day. The powder is taken into the nose in exactly the same manner as snuff; each dose is divided equally between the two nostrils and the patient should not blow his nose or sneeze for several minutes afterward. The only contraindications to the use of the method are pathologic conditions in the nose; a preliminary anterior rhinoscopy is indispensable not only to prevent failure but to avoid the accidents caused by the introduction of a fermentescible powder into certain pathologic noses.

Ultraviolet Ray Emanations of Cerebrin, Lecithin and Chlorophyll Following Their Irradiation.—From studies in which various irradiated substances were allowed to act on photographic plates for twenty hours in the dark, Serono and Cruto conclude: 1. Cerebrin, lecithin and chlorophyll, which are complex basic substances in the animal and vegetable kingdoms, all have photogenic properties after irradiation or exposure to the sun. The fact that in both the animal and vegetable kingdoms cholesterol is always combined with lecithin confirms the hypothesis of one of the authors on the protective nature of this substance with regard to lecithin: in all probability the cholesterol protects the lecithin against a too intense absorption of ultraviolet rays and prevents it from exhausting itself too rapidly after having been irradiated. Cholesterol appears to be a kind of insulator and fixative which, by reason of its impermeability to water, affords an effective protection to the cells without interfering with the osmotic and respiratory phenomena. 3. On these properties of lecithin to take up and emit energy one could base an hypothesis to explain the energetic metabolic action of injected lecithin.

36: 1169-1184 (Sept. 15) 1928

*Physical Chemistry of Blood Serum in Nephritis. Merklen, J. Chaumerliac, J. Guillaume and Achard.—p. 1169.
*Mitral Stenosis with Hypertension. A. Dumas.—p. 1172.
Surgery of Autonomic Nervous System. G. Pieri.—p. 1173.
Variability of Oxygen Pressure Required to Maintain Life. Béhague, Garsaux and C. Richet, Jr.—p. 1176.
*Perforating Sarcoma of Brain. L. Barraquer.—p. 1177.

Physicochemical Condition of Blood Serum in Nephritis.—In a study of the physical chemistry of the blood of five

cases of nephritis, Merklen et al. found that: 1. The variations in the chloride content of the plasma in cases of nephritis accompanied by uremia parallel the variations in the total quantity of ions in the serum. This fact proves the importance of the chloride ion in the pathogenesis of the disease. 2. The variations in the chloride content of the plasma in cases of simple nephritis do not parallel the variations in the total quantity of ions in serum. 3. In nephritis accompanied by uremia the chloride content of the formed elements of the blood is above normal, whereas in nephritis accompanied only by edema it is below normal. 4. In the terminal stages of uremia the chloride content of the plasma drops, whereas that of the cerebrospinal fluid rises. 5. The degree of dissociation of the electrolytes seems to have a real significance: when the number of dissociated ions is above the normal, one is in the presence of important morbid phenomena. 6. Chemical disturbances capable of provoking a more or less marked upset in the equilibrium of the osmotic pressure occur; two regulatory mechanisms, at least, then seem to interfere: (*a*) a decrease in the chlorides accompanying the increase in the urea content; (*b*) with the urea content constant, a decrease in the degree of dissociation accompanying an increase in the electrolytes.

Mitral Endocarditis with Hypertension.—In a study of forty cases of chronic mitral endocarditis, Dumas was struck by the presence of arterial hypertension in nine. This observation contradicts the classic idea that mitral stenosis is accompanied by hypotension. The author concludes that chronic mitral endocarditis in old persons who have borne their lesions well may be accompanied by arterial hypertension and that this is to be explained by the subacute evolution of the endocarditis, as in none of the cases was there a renal or any other lesion that might explain the hypertension.

Perforating Sarcoma of Frontal Lobes of Brain.—Barraquer describes a case of very large perforating sarcoma of the frontal lobes in a boy, aged 15, who did not present any of the psychic disturbances that are usually associated with frontal tumor.

Revue de Chirurgie, Paris

47: 367-427, 1928

Internal Architecture of Maxillary Bones. E. Gallois, M. Lafond and Japiot.—p. 367.
Myeloplaxomas of Articular Synovial Membrane. A. Talbot.—p. 399.
*Reduction of Shoulder Dislocations. J. Couniot.—p. 420.

New Method for Reduction of Shoulder Dislocations.—From demonstrations on cadavers of the logic of the procedure and from ten years of practical experience with it, Couniot recommends direct, downward traction of the arm in the treatment of shoulder dislocations. General ethyl chloride anesthesia is used to avoid unnecessary suffering by the patient and to diminish or abolish muscular contraction. The patient is placed on a table and a sheet is rolled up and slipped under the arm-pit on the side of the dislocated shoulder; its two ends are held by an assistant who stands behind the head of the patient and exerts counterextension. As soon as the patient is anesthetized, the surgeon flexes the forearm and pulls directly downward on the arm; to facilitate the traction the arm should be rotated slightly externally. The reduction is usually effected in a very short time; brutal traction is never necessary. A characteristic jerk is felt, but the snap heard in the classic methods of reduction is never noted. Shoulder dislocations that could not be reduced with the other methods have always been successfully reduced by the use of this method.

Revue de Médecine, Paris

45: 345-492, 1928

*Asthma Due to Cow's Milk. Creyx.—p. 345.
Mechanism Involved in Formation of Pleural Effusions. Z. Gorecki.—p. 361.

Case of Asthma Due to Cow's Milk and Refractory to Desensitization.—Creyx reports a case of milk asthma in a woman, aged 29, in which several attempts at desensitization were followed by only temporary relief. Born at term on a dairy farm, the patient was breast-fed until the age of 22 months; at this time she was weaned, but feeding with cow's milk produced attacks of asthma accompanied by vomiting and diarrhea; beef bouillon was therefore substituted for the cow's milk and for a time the disturbances disappeared. At the age of 10 years the patient began to assist her parents in handling the milk; although she did not drink a drop of it the attacks of asthma reappeared with such severity that she had to go to live with a relative who did not keep cows; the attacks disappeared. At the age of 18, she returned to her parents and resumed her former activities; the attacks of asthma reappeared with their previous frequency. At this time she consulted the author. The ingestion of even the smallest quantity of raw or boiled cow's milk resulted in an attack of asthma accompanied by vomiting, diarrhea and generalized urticaria. The sensitiveness to milk was so great that she could not remain in a room in which there was an open vessel containing it. A typical attack began with conjunctival injection and rhinorrhea and was characterized by spasm and increased secretion by the bronchial tree, which caused coughing and the expectoration of mucus. A skin test performed with cow's milk corroborated the clinical history. Various methods of desensitization were then tried. The first consisted of thirty-three hypodermic injections of boiled and diluted cow's milk administered in series at the rate of one every two days; between the sixth and the fifteenth injections the patient was free from attacks, but beginning with the fifteenth injection they reappeared with their former severity. Fifteen days later another attempt at desensitization with cow's milk was made, in which different dilutions and intervals were used, but no improvement in the patient's condition was noted. Nonspecific protein therapy in the form of intradermal injections of peptone was then tried, but the results of this treatment, also, were negative. Autoserotherapy as recommended by Widal was next tried and resulted in improvement which, however, lasted only four months. As a last resort, a maceration of scales from the skin of the patient, who was also afflicted with congenital ichthyosis, was made and with it a series of daily hypodermic injections was performed; this resulted in only temporary relief. At the present time the patient is free from attacks, by reason of the fact that her parents disposed of their cows.

Archivio Italiano di Urologia, Bologna

4: 285-396 (April) 1928

*Epidermoid Epithelioma of Kidney, with Calculous Uropyonephrosis. C. R. Fumagalli.—p. 285.
Tuberculosis of Bladder of Hypertrophic Type. T. Lucri.—p. 304.
*Dermoid Tumor of Bladder, with Large Calculus. G. Costa.—p. 317.

Epidermoid Epithelioma of Kidney, with Calculous Uropyonephrosis.—Fumagalli describes a rare condition in a man, aged 53. He found only one similar case in the literature (that of Rollin, 1906). When the abdomen was opened, it was found that the swelling observed at the clinical examination involved the right kidney, from which extended a voluminous mass as large as the head of a fetus, which pushed forward the ascending colon and the right colic flexure. The kidney presented the appearance of a hydronephrotic sac. All about was an advanced process of sclero-adipose perinephritis with adherent masses around the hilum and the pelvis. Palpation revealed the presence of a calculus in the kidney pelvis. Nephrectomy was performed. Following the operation, the urinary elimination was normal as to quantity and character. The patient was dismissed from the hospital as cured, twenty days after the operation. The author thinks it is logical to ascribe to the calculosis a primary causal influence in the genesis of the tumor.

Dermoid Tumor of the Bladder with Large Calculus.—Costa emphasizes that the case he reports has considerable importance from the surgical standpoint, owing to its anatomicopathologic rarity, and for its clinical value. The patient, a woman, aged 40, had given birth to eight children since her marriage at 16. The neoplastic mass, which, with the ovary, was about the size of a large chestnut, was in perfect continuity on one side (the external) with a segment of the bladder. The incision, in order to liberate the tumor, had to pass through the whole thickness of the bladder. A cure was effected as in ordinary cystomas, without complications of any kind affecting the abdominal cavity. The patient was discharged on the thirty-second day, with fairly regular functioning of the bladder. The calculus was about the size of a small peach, and was composed of urates and phosphates, with a few oxalates. The morbid symptoms, the therapeutic provisions, and some of the ana-

tomicopathologic details obscure the ovarian etiologic syndrome and call attention to a process that is purely vesical. The author reaches the conclusion that, up to the present time, no example of a simple cystic or complex dermoid tumor of the bladder proper, in the anatomicopathologic sense of a truly heterologic tissue originating and developing within the walls of that organ, has been found.

Clinica Medica Italiana, Milan

59: 85-191 (March-April) 1928

Regulation and Alterations of Cardiac Rhythm. A. Orsi.—p. 85.
Certain Ulcerative Processes of Large Intestine. G. Invernizzi.—p. 127.
*Dextrose in Saliva of Diabetic Patients. O. Da Rin and M. Weinberger. —p. 170.

Dextrose in the Saliva of Diabetic Patients.—In twenty cases of diabetes mellitus studied by Da Rin and Weinberger, they found dextrose in the saliva in only one instance. The authors think that the inconstant presence of this substance is due to various factors, among which they ascribe great importance to the relative excess of sugar in the blood and to the threshold of excretion, which they assume the salivary glands present for the elimination of dextrose.

Rivista di Malariologia, Rome

7: 85-216 (March-April) 1928

Hemolytic Process in Malarial Hemoglobinuria. G. Lega.—p. 85.
*Relative Therapeutic Efficacy in Malaria of Products of the Type of Quinine Ethylcarbonate. P. Biginelli.—p. 96.
Campaign Against Malaria in Venice. V. Valli.—p. 104.

Relative Therapeutic Efficacy in Malaria of Products of the Type of Quinine Ethylcarbonate.—Biginelli's researches lead him to hold that: Products of the quinine ethylcarbonate type do not have an antimalarial action as such but only so far as they are more or less decomposable so as to give out all or part of the quinine that they contain. These products are decomposed by means of hydrolysis, which is brought about solely by special catalyzers, such as dilute acids; for example, hydrochloric acid. The action of these products becomes more marked and also more prompt when the conditions for hydrolyzation are especially favorable, as when the quantity of acid is increased so as to dissolve the whole product. As a consequence, these products are, in practice, more active when their administration is followed by diluted hydrochloric acid. Even though the conditions for action are the best, these products, owing to the limited time that they remain in the stomach, produce an action that is in every case inferior to that produced by the corresponding quinine salts, by reason of the fact that their decomposition into quinine requires a relatively long time.

Archiv für klinische Chirurgie, Berlin

151: 237-444 (Aug. 22) 1928

Histology of Mediastinum: Relation to Artificial Pneumothorax. E. Seifert.—p. 237.
Operations on Liver and Biliary Tract: Anatomic Considerations. F. Walcker.—p. 250.
Inoperable Cases of Cancer: Statistics from Hochenegg's Clinic. F. Fuchs and O. Panek.—p. 261.
Surgical Treatment of Chronic Gastric and Duodenal Ulcer: Results of Gastro-Enterostomy and Gastric Resection, Especially Reichel's Method. E. Schwarz.—p. 280.
Surgical Treatment of Chronic Nonspecific Diseases of Knee Joint. F. Mandl.—p. 302.
*Treatment of Suppurative Meningitis. F. Starlinger.—p. 329.
Congenital Malformation of Kidney and Ureter. M. Lewy.—p. 343.
Indications for Surgical Treatment of Gastritis. G. E. Konjetzny.—p. 370.
*Induced Inguinal Hernia. K. Wohlgemuth and A. Joil.—p. 406.
Strawberry Gallbladder. J. G. Kopp.—p. 411.
Acute Isolated Phlegmon of Colon. Fenkner.—p. 430.
Instructive Cases of Bone Surgery. Fenkner.—p. 432.
Cholelithiasis with Occult Hemorrhages. K. Wohlgemuth.—p. 438.
Reply. Esau.—p. 440.
Leiomyoma of Ileum. A. Daniels.—p. 442.

Treatment of Suppurative Meningitis.—Starlinger reports on his experiences with the treatment of experimental meningitis by means of injection of hypertonic methenamine solution into the external carotid artery. He injected as much as 500 cc. in less than an hour's time, and the dog survived. He is not prepared to say what becomes of the injected solution; whether it reaches the various parts of the brain and meninges or not; but he asserts that this form of medication is not only feasible but free from danger even in the human being.

Induced Inguinal Hernia.—Wohlgemuth and Joil report on twenty-four cases of induced hernia in which they operated. These hernias are said to have been very common during the World War. Young men wishing to avoid military service submitted themselves to what might be termed professional hernia producers. These men inserted a finger or a glove distender into the inguinal canal and tore the external ring and the surrounding tissues with great force and at the expense of much pain. The victims were not anesthetized, and therefore often lost consciousness during the procedure. Usually the result was a direct inguinal hernia. If one manipulation did not result in the production of a hernia, it was repeated. In one instance the young man produced the hernia himself.

Archiv für Schiffs- und Tropen-Hygiene, etc., Leipzig

32: 383-440 (Aug.) 1928

Effect of Tropical Sojourn on Health and Functional Capacity. G. Fischer-Giese and O. Fischer.—p. 383.
Psoriasis and Dermal Leishmaniasis. G. Buss.—p. 391.
Yellow Fever in Liberia. W. O. Wehrle.—p. 401.
Description of Ornithodorus Venezuelensis. H. Ruge.—p. 406.
Hookworm Infection and Popular Antihelminthics. E. Hassler.—p. 409.
*Carcinoma Among Primitive Negroes. E. Maass.—p. 410.

Carcinoma Among Primitive Negroes.—Maass reports two cases which tend to refute the view that carcinoma occurs only among people who have had some contact with European civilization. Both patients belonged to a stock which, especially in Liberia, has had practically no contact with European civilization. One, a woman, aged between 40 and 45, had an adenocarcinoma of the right breast. The other, a man, of about the same age, had a cornified squamous cell carcinoma of the leg. Both patients died, the woman about two months after operation, the man about five months after operation.

Deutsche medizinische Wochenschrift, Berlin

54: 1403-1446 (Aug. 24) 1928

Pathogenesis of Organ Neuroses. O. Binswanger.—p. 1403.
Treatment of Mental Patients at Home. Raecke.—p. 1406.
*Mechanism of Chill. Strecker.—p. 1408.
Inflammation of Lumbar Nerve Roots. N. Gierlich.—p. 1410.
Epidemic Poliomyelitis in Chemnitz in 1927. R. Kochmann.—p. 1412.
*Etiology of Haff Disease: Animal Experiments. J. Fortner.—p. 1414.
Influence of Combined Malaria-Arsphenamine-Bismuth Treatment on Diseases of Eighth Cranial Nerve in Early Neurosyphilis. A. M. Memmesheimer and G. Theissing.—p. 1415.
Vegetative Neuroses. W. Stöwsand.—p. 1416.
Examination for Virginity. G. Strassmann.—p. 1418.
Experiences with Interruption of Pregnancy. H. Goldschmidt.—p. 1418.
*Treatment of Abscess of Sweat Glands. E. Kahnt.—p. 1419.
Prevention of Flatfoot. G. Muskat.—p. 1420.
Stone Formation in Cysts of Urachus. G. Neugebauer.—p. 1421.
Inflammations of Eye in Workers in Artificial Silk Factories. A. Gutmann.—p. 1422.

Mechanism of Chill.—Chilling, Strecker says, is a disturbance in the homothermal equilibrium of man. The regulation of this equilibrium is a physical as well as a chemical affair and on the physical side it depends indirectly but actually on the physical conditions of the external world. A chill rests on a many-sided complex of interacting factors, the key to which should be sought in the conception of homothermism.

Haff Disease: Animal Experiments.—Eels and fish from the waters of the Haff were fed to thirteen cats. In three of the cats, symptoms similar to those of Haff disease in human beings developed and histologic examination showed changes agreeing with those found in human beings with this disease.

Treatment of Abscess of the Sweat Glands.—Kahnt has found roentgen irradiation after incision an important aid in procuring permanent healing. Eighty-five per cent of the erythema dose is given through a filter 5 mm. thick, or the dose may be broken: 20 per cent and, after an interval of four or five days, 65 per cent of the erythema dose.

54: 1447-1488 (Aug. 31) 1928. Partial Index

Causal Treatment of Hay-Fever by Desensitization. K. Hansen.—p. 1447.
*Lead Poisoning, Icterus and Hepatic Injury. C. Lewin.—p. 1450.
*Treatment of Pylorospasm of Infants. Heile.—p. 1453.
Tuberculosis Immunity. A. Wolff-Eisner.—p. 1455.
Nephrosis in Light of Modern Knowledge. H. Knauer.—p. 1457.
*Tumor of Pituitary and Amenorrhea. H. Pulfer.—p. 1459.
*Blood Groups and Mental Diseases. F. Meyer.—p. 1461.
Blood Sugar During Treatment of Morphinism. A. Hirsch.—p. 1462.
*Massive Retroperitoneal Hemorrhages. O. Ecarius.—p. 1462.

Exploratory Excision and Curettage in Cancer of Uterus in General Practice. E. Asrican.—p. 1464.
Treatment of Gonorrhea with Silver-Containing Expansible Suppositories. H. Plotz.—p. 1466.
Intravenous Acriflavine Treatment of Gonorrhea. E. Kromayer.—p. 1467.
Action of Small Intravenous Doses of Antimony Tartrate. E. Behrenroth. —p. 1468.
Practical Treatment with Aphrodisiacs. A. Scheuer.—p. 1468.

Lead Poisoning, Icterus and Hepatic Injury.—Lewin thinks it probable that all cases of icterus in lead poisoning are caused by injury to the liver from the lead. The icterus takes various forms. He cites cases in which only indirect bilirubin appeared in the serum, and no bilirubin, only urobilin, in the urine. In these cases the color of the stool is not affected. Other cases presented the clinical symptoms of so-called catarrhal icterus with direct and indirect bilirubin in the serum, bile pigment in the urine, and clay-colored stools. An extremely high grade of toxic injury to the liver was seen in two cases of acute yellow atrophy with fatal outcome. A parallelism between the icterus and the injury to the blood was not demonstrable. In cases with advanced anemia, icterus was absent; on the other hand, it was present in some cases in which the blood destruction was slight.

Roentgen Diagnosis and Treatment of Pylorospasm of Infants.—Heile does not approve of trying the effect of five or ten days of conservative treatment in all cases of spasmodic vomiting in infants. The differential diagnosis between hypertrophic and spastic stenosis may be made at the beginning of the illness by roentgen examination. In hypertrophy one sees the peristaltic spasm with aperistaltic, atonic phases and distinct hypertrophy of the wall. The spastic stomach, on the other hand, presents torpid peristalsis and unchanging contraction, no distortion of the stomach to the right and no hypertrophy of the wall. Dilatation of the stomach may be present in both cases, especially if the exposure takes place during diastole. It is certain to be present in the severer cases of spasm, in which the contraction of the pylorus is a permanent condition. These rare borderline cases have an unfavorable prognosis.

Tumor of Pituitary and Amenorrhea.—In Pulfer's patient, aged 53, menstruation had ceased in her twentieth year and had not been resumed. She had married but had never become pregnant. The condition for which she consulted Pulfer started ten years before, but she had been really ill for only about six months. The clinical symptoms were those of myocarditis and cardiac insufficiency. Edema of the feet and legs had been present for two weeks. The temperature was slightly subnormal, the blood pressure relatively low. Measures to promote diuresis met with little success. The patient died two weeks after admission to the hospital. At necropsy a tumor of the pituitary, composed of nonspecific or mother cells, and infantilism of the genital organs were found. There had been no definite symptoms from the side of the pituitary during life. The author leaves the question open whether the tumor developed long after the cessation of menstruation, or whether it existed in youth and, having caused the genital disturbance, remained for the rest of life anatomically and functionally stationary.

Blood Groups and Mental Diseases.—Meyer typed the blood of 956 inmates of a hospital for mental patients in Lower Silesia. Among the patients with paresis, there was a percental predominance of group A; among the manic-depressive patients of group B. Schizophrenia appeared with about the same relative frequency in all four groups. It is not, however, demonstrated that any particular psychosis shows a preference for any particular blood group.

Massive Retroperitoneal Hemorrhages.—In Ecarius' first case the hemorrhage was caused by a hypernephroma. Early nephrectomy saved the patient's life. In the second case the source of the hemorrhage was rupture of an aneurysm of the abdominal aorta. The perforation took place 2 cc. below the branching off of the left renal artery, a site of predilection for sclerotic processes in the aorta. The patient was 41 years old and there were no indications of syphilis. He died in collapse following exploratory laparotomy. Whatever the cause of the massive retroperitoneal hemorrhage, the chief symptoms are sudden pain in the renal region, signs of progressive internal bleeding, and swelling in the renal region. Abdominal symptoms—vomiting, retention of flatus and stool, meteorism—may complicate the picture. Exploratory puncture is a useful diagnostic measure. In both the cases here reported, puncture yielded blood.

Deutsche Zeitschrift für Chirurgie, Leipzig

210: 293-429 (Aug.) 1928

*Study of Blood Ferments in Diseases of Pancreas, Especially Gastro-Duodenal Ulcer Penetrating the Pancreas. A. Grassberger.—p. 293.
Resorptive Power of Peritoneum in Peritonitis. G. Magnus.—p. 307.
*Effect of Injection of Nicotine into Celiac Ganglion on Paralysis of Intestine. P. Rosenstein and H. Köhler.—p. 315.
Simple Technic for Colostomy Permitting Complete Closure. R. Demel. —p. 336.
*Radical Operation for Umbilical Hernia; Results; Brenner's Plastic Operation. E. Duftschmid.—p. 347.
*Incision for Appendectomy; Incision at Outer Edge of Rectus. Gertkemper.—p. 354.
Phlegmonous Gastritis. H. Paugger.—p. 368.
Primary Sarcoma of Stomach. J. Jáki.—p. 381.
Fibroma of Mesentery. J. M. Grigorowsky.—p. 390.
Benign Tumors of Gastro-Intestinal Tract and Mesentery. N. N. Ssokolow.—p. 397.
Adenoma of Liver. E. Fischer.—p. 404.
Aplasia of Gallbladder. L. Schmidt.—p. 409.
Surgical Treatment of Chronic Cholangeitis by Choledochoduodenostomy. H. Toole.—p. 415.
Gastroptosis; Normal Position of Stomach; Factors in Its Maintenance. H. G. Zwerg.—p. 422.
Effect of Surgical Procedure on Heart Function. H. Reissinger.—p. 429.

Ferments in Blood in Diseases of Pancreas.—Grassberger states that, in diseases of the pancreas, the blood diastase and lipase are usually increased in amount, the former for several weeks only, the latter sometimes for months. In cases of acute exacerbation of a chronic pancreatitis, only the lipase is increased in amount. In cases of healing or progression into a chronic state, both ferments return to their normal values or they may even become subnormal. The author does not, however, regard these observations as of much diagnostic value, as they are inconstant.

Value of Nicotine Injections in Paralytic Ileus.—Rosenstein and Köhler have experimented to find something that will overcome the intestinal immobility in cases of paralytic ileus. They found that, when nicotine was injected into the celiac ganglion, immediate results were secured. They use only pure nicotine, injecting from 5 to 8 mg. in 50 cc. of sterile water. The nicotine itself must not be sterilized. The contents of an ampule are added to the required amount of sterile water. Twenty-six clinical cases were treated in this manner. In seventeen the result was positive. Nine of these patients died later from the illness causing the ileus; eight remained cured. The nicotine is not regarded as a cathartic, nor is it indicated in any but the cases of paralytic ileus, and then only after all other measures directed toward giving relief have failed. The method of injection is described in detail. It is made into the back, a long needle being used. For exact details, the original paper should be consulted.

Radical Operation for Umbilical Hernia.—Duftschmid recommends Brenner's plastic herniotomy in these cases because it is anatomically correct, can be performed under local anesthesia, is suitable to fat persons, and is successful in 96.6 per cent of all cases. Brenner described the operation in 1906.

Incision for Appendicitis.—Gertkemper defends the incision made at the outer edge of the rectus because it is rarely followed by a postoperative hernia or adhesions; it permits a good view of the abdominal cavity. However, it is not applicable in cases of appendical abscess or in cases of doubtful diagnosis. In the former cases the incision should be made farther to the right, nearer the anterosuperior spine; in the latter the paramedian incision is preferable. Of 1,065 cases examined after operation, primary healing, without drainage, occurred in 579 cases, and in none of these did a postoperative hernia result. Among the 445 drained cases there were forty-one postoperative hernias; thirty-four of these occurred in cases in which the incision did not exceed 15 cm. in length.

Klinische Wochenschrift, Berlin

7: 1625-1672 (Aug. 26) 1928

Usefulness of Examinations of Gas Metabolism. D. Jahn.—p. 1625.
Renal Changes in Patient with Diabetic Coma and Uremia Treated with Insulin. E. J. Kraus and H. Selye.—p. 1627.
*Capillary and Venous Blood Sugar After Ingestion of Sugar. F. Depisch and R. Hasenöhrl.—p. 1631,

*Influence of Extract of Thymus on Fracture Healing. K. Glässner and J. Hass.—p. 1633.
Sulphur Treatment of Syphilis, Especially Neurosyphilis. K. Schroeder. —p. 1636.
Simple Method of Differentiating Normal from Pathologic Cerebrospinal Fluids. J. Bakucz.—p. 1639.
Results of Sanocrysin Treatment. K. Secher.—p. 1640.
"Activity Substances in Muscles": Addendum. E. Lehnartz.—p. 1645.
Vaccination and Endocarditis. H. Freifeld.—p. 1645.
Influence of Heavy Metals on Growth of Mouse Tumors. M. Kochmann. —p. 1646.
Case of Multiple Myeloma. W. Wadi.—p. 1646.
Roentgenotherapy of Exophthalmic Goiter. C. Fried.—p. 1648.

Capillary and Venous Blood Sugar Curves After Ingestion of Dextrose.—In normal persons, Depisch and Hasenöhrl found regularly a great difference between the capillary and venous blood sugar values after ingestion of dextrose. In patients with diabetes this difference is, in general, less. Frequently it is entirely absent. Sometimes, on the other hand, particularly in cases with resistance to insulin, the same difference as in normal persons is encountered. The determination of the difference between the capillary and the venous blood sugar seems to provide a method of estimating the amount of insulin formed after administration of sugar and of obtaining an approximate idea of the course of insulin production from the standpoint of time. The authors believe that the pancreas plays an important part in the development of obesity of whatever origin. In a case in which the weight had increased rapidly within a year, the capillary blood sugar curve was normal, but the difference between the capillary blood sugar values and the venous blood sugar values was so great as to suggest an abnormally large secretion of insulin. Strikingly similar capillary and venous blood sugar curves were presented by an asthenic man during the course of a successful insulin fattening cure.

Influence of Extract of Thymus on Fractures.—In experiments on young cats, Glässner and Hass found that thymectomy delayed callus formation, and that injection of extract of thymus hastened bone consolidation. In a series of experiments on older cats, the influence of extracts of various endocrine glands was tested. Thymus extract was found to be the most powerful in its effect on callus formation. The next most powerful extract was that of the parathyroids. Thymus extract was then used in a patient who had undergone linear osteotomy of both legs. A patient of about the same age who had had the same operation served as control. At the end of four weeks a comparison of the roentgenograms of these two cases showed scarcely any difference. At the end of three months, however, scarcely any callus could be seen in the roentgenogram of the control patient and the fragments were still movable, whereas in the patient treated with thymus there was complete consolidation, with well developed myelogenous as well as periosteal callus. Since then, thymus extract has been used with complete success in a large number of cases of delayed callus formation. To the thymus extract used in the experiments and clinical cases a phosphorus-containing substance was added.

Medizinische Klinik, Berlin

24: 1335-1374 (Aug. 31) 1928. Partial Index

*Bone Grafts in Tuberculosis of Spine. C. Springer.—p. 1335.
*New Method in Treatment of Scolioses. Chlumský.—p. 1337.
Pathologic Peculiarities of Deformity: Correction of Deformities of Foot. L. Kreuz.—p. 1338.
Bloodless Treatment of Dislocation of Semilunar Bone. W. Jaroschy and H. V. Gregora.—p. 1340.
Practicability of Prophylaxis of Rickets. Rietschel, Szegö and G. Prinke. —p. 1343.
Protest Against Passive Motion in Joint Injuries. L. Böhler.—p. 1345.
Physiologic Incision for Opening Knee Joint. F. Erkes.—p. 1346.
Impacted Dislocation of Patella. H. Wagner.—p. 1347.
Known and Unknown Diseases with Bone Softening. K. Wagner.—p. 1349.
Combined Diseases of Foot. R. Kuh.—p. 1351.
Orthopedic Apparatus for Patients with Tabes. T. Wohrizek.—p. 1352.
Connection Between Nutrition and Infection. E. Friedberger and F. Hoder.—p. 1353.
Allyl Arsenic Acid. E. Leschke.—p. 1355.

Bone Grafts in Tuberculosis of Spine: Suggested Stimulative Effects of Bone Grafts on Metabolism.—Springer has been particularly impressed by the improvement in the patient's general condition that has followed this operation. This improvement set in too late to be attributable merely to rest and hospital care, and he suggestes it may have been brought about by stimulation of the metabolism by the transforming processes going on in the transplant and its surroundings as well as by the absorption of the extravasated blood in the operation wound. He thinks that it might possibly be justifiable in cases of bone or joint tuberculosis to try the effect of implantation of a bone splinter into healthy bone at a distance from the tuberculous focus. For its direct results he prefers Polya's to Albee's operation. The splint lies close to the diseased vertebrae instead of being "balanced" on the spinous processes. He has found a bone-splinting operation successful in relieving the severe pains that sometimes occur in a healed gibbus during the period of rapid longitudinal growth.

New Method of Treating Scoliosis.—Chlumský treats cases of mobile scoliosis on the principle of traction comparable to that produced by an extensive scar. He first takes a large transverse fold in the skin over the convexity of the scoliosis. Buried purse-string sutures hold the fold in place. The skin fold remains for a few weeks, then gradually disappears. During this time the patient holds himself in a position that tends to correct the scoliosis and the obliquity of the spine diminishes, frequently with surprising rapidity.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

70: 393-468 (Aug.) 1928

Spontaneous Rupture of Uterus. E. G. Abraham.—p. 393.
*Tropical Malaria in Mother and New-Born Child. M. I. Magid.—p. 404.
Prevention and Treatment of Perforation of Uterus in Artificial Abortion. C. G. Barsky.—p. 414.
Fetal Cleft Formations Combined with Other Disturbances of Development. B. Beuthner.—p. 425.
Distribution of Ovarian Hormone in Mammalian Organism. M. Gutman. —p. 433.
Folliculoma or Oophoroma Ovarii. M. Esser.—p. 440.
Prospects of Cure in Gynecologic Carcinoma. O. Strauss.—p. 445.

Tropical Malaria in Mother and New-Born Child.—The mother in this case died in malarial coma three days after giving birth to a living child about three weeks before term. She had had tropical malaria for about six months. The placenta was expelled intact and did not present any pathologic changes. Necropsy was performed and it was decided that the death was from general intoxication and thrombosis of the cerebral blood vessels by malarial parasites. Repeated examinations of the child's blood during the first nine days after birth failed to reveal plasmodia. On the twenty-first day, ring-like malarial plasmodia were discovered. Between the ninth and the twenty-first day, examinations had not been made. The child did not thrive and on the tenth day after birth developed icterus, which rapidly progressed. At this time the spleen first became palpable. Quinine was given and the child recovered. The temperature was not elevated during the entire course of the illness. It is believed that the child was infected through the placenta during parturition, when, if the placenta is injured, the mother's blood may come in contact with that of the child. The child did not receive breast milk from the mother and no cases are known in which persons have become infected with malaria in Kief, where the birth took place. The mother had arrived from another district, where malaria is endemic, a few days before the birth. The Wassermann reaction in the child was repeatedly negative; in the mother the test was not made.

Münchener medizinische Wochenschrift, Munich

75: 1487-1534 (Aug. 31) 1928. Partial Index

Pelvic Measurement and Management of Labor in Cases of Contracted Pelvis. L. Seitz and H. Guthmann.—p. 1487.
Regeneration of Bone; Surgical Aspect. H. Dieterich.—p. 1489.
Pathology and Roentgenology of Congenital Clubfoot. M. Böhm.—p. 1492.
*Oxygen Consumption and Vital Granulation in Pernicious Anemia Treated by Liver Diet. E. Derra.—p. 1494.
Allergic Phenomena and Their Consequences. A. Mühling.—p. 1496.
Phrenicus Paralysis Accompanying Erb's Paralysis in the New-Born. A. Mulzer.—p. 1498.
Diagnostic Significance of Bloody Cerebrospinal Fluid. H. Schlack.—p. 1502.
Case of Megalosyndactyly. A. Dombrowski.—p. 1503.
*Perforation of Stomach After Ingestion of Contrast Substance. J. Amberger.—p. 1504.
Paroxysmal Tonic Ocular Spasms in Chronic Myastatic Encephalitis. O. Lampl.—p. 1504.

Oxygen Consumption and Vital Granulation in Pernicious Anemia Treated by Liver Diet.—In fifty-one of fifty-three patients with pernicious anemia given liver diet,

Derra found rapid increase in the percentage of reticulocytes in the blood. In seven patients the oxygen consumption of the blood was also tested. The oxygen consumption and vital granulation were found to run approximately parallel, increasing in the stage of healing and falling when normal blood conditions were attained. Increased oxygen consumption and vital granulation are supposed to be characteristics of young erythrocytes.

Perforation of Stomach After Ingestion of Contrast Substance.—Two further cases of perforation of the stomach following ingestion of a contrast meal are reported by Amberger. In the first patient, a man, aged 68, an ulcer was diagnosed on roentgen examination. Ten weeks later he was admitted to the hospital for suspected perforation. There was severe pain on pressure in the epigastrium with palpable resistance, but without tension of the abdominal wall or other signs of perforation. Three days after admission he was again examined with the roentgen ray. The clinical diagnosis of perforated ulcer was confirmed. There were no particular complaints after the examination. Operation was performed the next day. An ulcer the size of a walnut, situated on the lesser curvature and perforating toward the pancreas, to which it adhered, was discovered. Small quantities of the contrast substance were found in the abdominal cavity in the vicinity of the ulcer and on several intestinal loops. In the second case, three days separated the roentgen examination from the operation. No symptom suggesting perforation occurred after the examination. The diagnosis was pyloric occlusion, probably from carcinoma. Operation disclosed a perforated ulcer in the posterior wall, adherent to the pancreas and entirely occluding the pylorus. Here also small quantities of the contrast substance, but no other gastric contents, were found in the abdominal cavity. Both patients recovered.

Wiener klinische Wochenschrift, Vienna

41: 1245-1272 (Aug. 30) 1928

Origin of Pathognomonic "Crescendo" Murmur in Stenosis of Mitral Ostium. W. Dressler.—p. 1245.
*Dietotherapy in Diarrhea of Infants. L. Moll.—p. 1249.
Intracardiac Use of Strophanthin in Collapse and Coma from Acute Poisoning. R. Fleckseder.—p. 1253.
Serum Treatment of East Indian Viper Bites. P. Moritsch and H. Pirker.—p. 1255.
*Treatment of Rheumatic Diseases with Bee Poison. K. Wasserbrenner. —p. 1255.
Treatment of Speech Disturbances. E. Fröschels.—p. 1256.
Cancerous and Precancerous Dermatoses. S. Brünauer.—p. 1258. C'tn.
Primary Faradic Swelling Current in Theory and Practice. S. Ebel.—p. 1261.
*Ultraviolet Treatment of Angina Pectoris. L. Freund.—p. 1264.
Reply. E. Freund.—p. 1265.
Diagnosis and Treatment of Glaucoma. K. Lindner.—p. 1265.
Hyperpigmentation: Treatment. R. O. Stein.—p. 1267.

Dietotherapy in Diarrhea of Infants.—Moll does not believe in keeping the infant with diarrhea too long on a water or tea diet. Acidosis, exsiccation with resultant disturbance in mineral metabolism, and loss of strength and weight are to be avoided. After the first six, twelve or twenty-four hours, a diet that will stop the loss of weight as well as provide plenty of water and salts is given. Breast milk is too poor in salts and in nitrogen and too rich in fat to be an ideal diet for this purpose. Hence, in feeding infants with diarrhea, Moll combines breast milk with an almond milk and whey mixture (equal parts of each). This combination gives 650 calories per liter. For the almond milk 1 liter of water is added gradually to 150 Gm. of sweet almonds that have been shelled and ground after standing for twelve or twenty-four hours, covered with cold water, at room temperature. A calcium whey is prepared by adding 4 or 5 Gm. of calcium lactate to 1 liter of whole milk, boiling and straining. To each liter of strained almond milk are added 1 liter of calcium whey, from 0.5 to 1.0 Gm. of sugar, and 0.3 Gm. of rice flour or maize flour. The whole is now boiled. The calory content per liter is from 570 to 650. For older babies a mixture of wheat or rice flour, egg, water, sugar, salt and sodium bicarbonate is boiled in a pudding bowl and given stirred up with whey. Since the introduction of these maintenance diets (which may be continued for a week) the mortality of infants with diarrhea in Moll's institution has fallen from 32 to 5.1 per cent. In diarrhea the diet should be such as to alter the reaction of the stool. In most cases of diarrhea the stool is alkaline; the diets outlined tend to change the reaction to acid. In cases of acid stools, albumin milk (eiweissmilch) proves useful. In dyspepsia in breast-fed babies, one or two feedings daily with calcium milk (two thirds) acts favorably; the necessity of withdrawing the child from the breast is thus avoided.

Treatment of Rheumatic Diseases with Bee Poison.—Wasserbrenner has used injections of bee poison in the treatment of 121 patients with various rheumatic diseases: 45 cases of sciatica, 16 of plexus neuralgia, 25 of intercostal neuralgia, 25 of chronic arthritis and 10 of arthritis deformans. Intracutaneous injections gave better results than subcutaneous or intramuscular. The best results were obtained in sciatica and other rheumatic neuralgias; in these there were scarcely any failures. Arthritis deformans proved refractory. The preparation used was protein-free and the hemolytic property present in natural bee poison was absent.

Zentralblatt für Chirurgie, Leipzig

55: 2241-2304 (Sept. 8) 1928

Intolerance to Bile Following Resection of Stomach. C. Borchgrevink. —p. 2242.
*Formation of Gritti Stump with Wedging-in of Patella. F. Oehlecker. —p. 2250.
Treatment of Tropical Bubo. H. Kümmell, Jr.—p. 2254.
Joint Bodies in Ankle Joint. W. Schosserer.—p. 2256.
Prosthesis for Amputated Lower Leg. Zur Verth.—p. 2257.
Malformation of Testes. L. Simon.—p. 2259.
Use of Scopolamine Ephedrine in Urology. N. Moro.—p. 2261.

Modification of Gritti Amputation.—In thirty amputations of this type, Oehlecker has used the patella to cover the femur by wedging it into a specially prepared mortise. The lower or under surface of the patella is freed of cartilage and shaped into a square plug by means of a jigsaw. This plug is fitted into a similar depression in the end of the femur, thus providing a firm, painless stump.

Norsk Magasin for Lægevidenskapen, Oslo

89: 845-932 (Sept.) 1928

*Radium Treatment of Cancer. S. A. Heyerdahl.—p. 845.
Ruptured Corpus Luteum—Intra-Abdominal Hemorrhage—Ovarian Pregnancy. F. Harbitz.—p. 866.
*Orientation in Surgery of Sympathetic. H. F. Harbitz.—p. 870.
Experiences in Thoracoplasty in Pulmonary Tuberculosis. M. H. Gjessing.—p. 885.
Three-Object Comparative Test for Central Color Scotoma. S. Holth. —p. 898.

Radium Treatment of Cancer.—Heyerdahl discusses the development of deep radium therapy with large amounts of radium (from 1 to 4 Gm.) at a distance of from 10 to 12 cm. Regaud's technic is described. Eleven cases successfully treated are reported. Of these, three had been resistant to earlier contact treatment with radium.

Orientation in Surgery of Sympathetic.—Harbitz reviews the surgery of the sympathetic in France on the basis of his own observations in Leriche's clinic and of Leriche's review on periarterial sympathectomy (1927). Among the results which seem to him worthy of note are those in chronic ulcers of the lower extremities, in pains in amputation stumps, and in pseudarthroses.

Ugeskrift for Læger, Copenhagen

90: 895-914 (Sept. 13) 1928

Iron and Liver in Simple Anemia. H. C. Gram.—p. 895.
*Auricular Tetanus and Its Relation to Ocular Tetanus. G. V. T. Borries. —p. 900.

Aural Tetanus and Its Relation to Ocular Tetanus.—Borries has found only nine cases of ear tetanus published, with recovery in five. The disorder occurs after traumas, extensive or slight, and without definitely established traumas in secondary infections of a suppurating middle ear. Postoperative aural tetanus seems to be unknown. Ocular tetanus, while also rare, is apparently more common than auricular tetanus and, like it, may occur after very slight lesions. Ear tetanus is marked by trismus, difficulty in swallowing, and sometimes by involvement of the facialis, in the form of spasm or of paralysis. In eye tetanus involvement of the facialis is more constant. While other nerves may be affected in tetanus of the head, the facialis symptoms are especially noticeable. He warns that in diseases of the facialis of uncertain cause, tetanus should be borne in mind, even without known trauma.